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an exploratory study into relationships between anger, well-being, and mental health

Anger and Well-Being: An exploratory study into relationships between anger, well-being, and mental health

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Abstract

Anger has long been a recognised feature of many mental health disorders and broadly associated with poorer mental health. However, few studies have investigated the relationship between anger and a broad spectrum of areas of well-being. The present study re-examines the links between anger and mental health, as well as extending the investigation to relationships between anger and well-being and moderating influences that anger has on the relationship between well-being and mental ill health. Analysis of a survey of well-being and anger found that, after controlling for low mood/depression, anxiety, stress, and self-harm/suicidal ideation, increased levels of anger intensity/frequency, anger suppression ("anger-in"), anger expression ("anger-out"), and anger duration had negative relationships with several well-being areas, whereas anger control and rage had positive relationships with areas of well-being. Anger intensity/frequency, anger-out, and rage were also found to weaken the relationships between indicators of poor mental health and areas of well-being, whereas higher anger-in and anger control increased the strength of those relationships. This was particularly evident for well-being factors such as self-esteem, positive affect, and worry. This research highlights the complexity of anger, showing that while many components perform similarly to indicators of poor mental health, some components like rage appear to be associated with better well-being in multiple domains. The findings showing moderating effects of anger components on relationships between indicators of psychological distress and well-being provide preliminary evidence for the existence of a protective effect of anger.

Author's Declaration

I declare that the work in this dissertation was carried out in accordance with the requirements of the University's Regulations and Code of Practice for Research Degree Programmes and that it has not been submitted for any other academic award. Except where indicated by specific reference in the text, the work is the candidate's own work. Work done in collaboration with, or with the assistance of, others, is indicated as such. Any views expressed in the dissertation are those of the author.

SIGNED: Bryn Williams DATE: 07/11/2019

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Anger and Well-Being: An exploratory study into relationships between anger, well-being, and mental health

1. Introduction

Anger has long been associated with mental health problems, characterising disorders such as oppositional defiant disorder, intermittent explosive disorder, and disruptive mood dysregulation disorder, and appearing prominently as features of more common disorders such as depression, anxiety, bipolar depression, and psychosis (DSM-V, 2013). However, beyond examining prevalence rates, few studies have investigated the relationship between mental health and anger in normal populations (Barrett, Mills, & Teesson, 2013; Hawkins & Cougle, 2011). Even these most recent studies fail to truly explore the link between anger and mental health, focusing only on the relationship between anger and specific conditions, rather than on how anger is related to basic psychological well-being constructs and what role it plays in exacerbating or soothing the impact of mental health conditions on well-being. If anger is to be understood in the context of mental health, then it is imperative to examine how it relates to core components of well-being as well as common disorders such as anxiety and depression.

In order to highlight the paucity of research looking at anger in the context of psychological well-being a brief keyword search was conducted on ScienceDirect. This search produced 325,295 results for "Anxiety and Well-Being", 578,075 for "Depression and Well-Being, and 81,256 for "Anger and Well-being. For the former two searches the first 200 results have the key terms co-occurring in article titles 23 and 24 time respectively. "Anger" and "Well-Being" only shared the same article title once in the first 200 results. Whilst this is by no means a watertight analysis, it does help to draw attention to the fact that anger, despite being a highly prevalent co-morbid problem in major mental illnesses (sudden, intense anger

episodes or “anger attacks” in depression = 30-62%, anger attacks in anxiety disorders = 29-32%; Barrett, Mills, & Teesson, 2013), has been relatively neglected in the literature. In their analysis of the mental health correlates of anger, Barrett et al. (2013) noted that only one prior study had ever been conducted looking at anger and mental health in the general population – and even then the scope of the study was limited to anxiety disorders (Hawkins & Cougle, 2011).

The present study aims to identify the relationships between anger and well-being in a general population after controlling for frequently comorbid negative emotions. This represents a significant extension of the work conducted by Hawkins and Cougle (2011) and Barrett, Mills, and Teesson (2013) by including a wider range of anger components and conducting interaction analysis in order to investigate the potential functional or protective influences that anger has been suggested to have on well-being. Controlling for the frequently comorbid negative emotions such as depression and anxiety will help to identify whether anger has significant independent relationships with well-being and mental health and whether it shows a consistently negative influence across well-being or if it produces a more mixed profile.

1.1 What is Anger?

Before discussing how anger and mental well-being may be related, it is worth exploring what anger is and how prevalent a problem it is in the field of mental health. Anger is defined in terms of feeling hostile, tense, displeased, indignant, threatened, thwarted, wronged, and frustrated (Kazdin, 2000; Mosby’s Medical Dictionary, 2009; Miller-Keane Encyclopaedia and Dictionary of Medicine, 2003; Collins Dictionary of Medicine, 2004). It is considered the primary driver behind the former component of “fight-or-flight” responses (Barlow, 2002), associated with driving “approach” behaviours (Carver &Harmon-Jones,

2009), energising and motivating responses (Novaco, 2010), and imparting greater feelings of control and mastery (Lang, 1994). While many researchers have considered anger to be a "negative" emotion (Averill, 1983; Phillips, Henry, Hosie, & Milne, 2007), others have argued that this is an oversimplification, and that anger can serve many positive purposes and can be associated with reductions in the intensity of some negative emotions (e.g. fear, shame) and increases in positive emotions such as control, empowerment, and resilience (Novaco, 2010; Olatunji, Ciesielski, & Tolin, 2010). Harmon-Jones, Harmon-Jones, Abramson, and Peterson (2009) found that in anger-evoking situations, anger was positively correlated with positive affect as conceptualised by the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), leading the authors to suggest that anger, as well as other major emotions such as love, are more context and situation-dependent and that to label them as strictly negative or positive is misleading. In order to briefly illustrate this concept an example for the negative side of love is considered: While many early theorists considered experiencing love to be core to a happy and well-adjusted life (e.g. Rogers, 1959), love can also lead to enormous emotional pain and cause great damage to well-being. Baumeister, Wotman, and Stillwell (1993) investigated the phenomena of unrequited love – where one person feels love for another, but is not loved in return. Findings indicated that, in the case of romantic attraction, the experience was distressing for both parties and linked to reductions in self-esteem, and increased feelings of guilt and humiliation. Other links between "positive" emotions such as love and significant reductions in well-being are easy enough to imagine – death of a loved one, separation from a loved one etc.

Stewart, Levin-Silton, Sass, Heller, and Miller (2008) investigated the relationship between anger, anxiety, depression, and brain activity, finding that anger expression style may help better characterise anger as either an approach or avoidance emotion. Anger

suppression (actively avoiding expressing felt anger), also known as “anger-in”, was associated with withdrawal motivation and lower levels of positive affect, fitting the typical profile of a negative emotion. Participants high in levels of anger-in were also more likely to have higher levels of anxious apprehension than those who expressed their anger, “anger-out”, while sharing the same levels of anxious arousal.

1.2 What is Well-being?

One of the earliest conceptualisations of well-being was that it existed as the positive end of the a positive-negative affect continuum (Dodge, Annette, Huyton, & Sanders, 2012), placing it firmly as the opposite of negative psychological or emotional states and primarily revolving around the idea of ‘happiness’. This was eventually expanded by researchers such as Ryff (1989) and Diener and Suh (1997) to encompass life satisfaction, positive affect and negative affect, with positive well-being consisting of high amounts of the former and low amounts of the latter. However, later work on the relationship between positive and negative affect found that the correlation between the two was indeed negative, but not large enough to consider them as opposite ends of a spectrum, and the suggested that they are better represented as two distinct factors (Heady, 2006; Bradburn, 1969). This implies that one can enjoy a considerably positive affectual experience, whilst also experiencing a reasonable level of negative affect. Further complicating well-being as a construct, many researchers have posited a large range of dimensions or factors under the umbrella of well-being, including: goal fulfilment (Emerson, 1985), social relationship quality, ability to cope with challenges and stress, feeling productive (World Health Organisation, 1997), and fulfilment of basic needs (e.g. safety, social, respect, income, autonomy; Tay & Diener, 2011). Medvedev and Landhuis (2018) had 180 participants take several of the major well-being scales covering a broad range of areas from physical and mental health to social and environmental experiences. Factor analysis revealed that all scales loaded strongly onto a

proposed global well-being factor, with psychological health domain items explaining the greatest amount of variance in this latent factor. While social and environmental items were much weaker predictors in multiple regression analyses, it is unclear if this is an artefact resulting from order-of-entry – for example, poor social relationships may be directly causing poorer mental health and subsequently explain similar variance. In their review of 99 well-being measurement instruments, Linton, Dieppe, and Medina-Lara (2016) found that the most common well-being dimensions included were depression, positive affect, physical well-being (including fatigue), social well-being (including relationships and social support), and personal circumstances (including feelings of control, goal achievement etc.). Other categories included day-to-day functioning and engagement in activities and spiritual well-being. This demonstrates that within the literature a highly diverse range of factors have been seen as either core or significantly related to the concept of well-being.

There has also been a considerable cross-over between well-being and personality research, with the two constructs often sharing similar features and showing strong relationships (Diener, Scollon, & Lucas, 2009). For example, life satisfaction has been found to demonstrate moderate to high levels of stability over extended periods of time and across multiple measures (Magnus & Diener, 1991; Ehrhardt, Saris, & Veenhoven, 2000). Many constructs that are now core to modern conceptualisations of well-being like positive and negative affect have been argued to be different facets of an underlying personality-emotion system (Tellegen, 1985). Both positive and negative affect have also been shown to demonstrate moderate stability coefficients over extended periods of time as well (Watson & Walker, 1996; Costa & McCrae, 1988). Further evidence for a strong link between personality and well-being stems from studies finding that positive and negative affect measurements correlated strongly across a diverse range of situations over the course of

several days (Diener & Larsen, 1984), suggesting that they are not entirely situationally dependent and may, to some extent, represent attitudinal or personality-like features. More recently, resilience has also been proposed as a key variable in understanding well-being (Kahn & Juster, 2002). Resilience represents the capacity to address challenges, recover from setbacks, and to reduce the impact of stressors on one's emotional state (Ryff, 1989; Richardson, 2002). Tugade, Fredrickson, and Barrett (2004) attribute resistance to psychopathology to resilience. In a similar vein, emotional stability has also been touted as a crucial feature of good well-being, accounting for greater variance in multiple regression models than factors such as neuroticism and extraversion (Hills & Argyle, 2001; Vitterso, 2001).

Well-being is also characterised, in part, by the types of measures used to investigate it. For example, some researchers investigate well-being by asking participants how satisfied or happy they are about their life in general (e.g. ONS, 2019), framing well-being as a cumulative score or average across one's lifespan. Others have focused on immediate emotional states, arguing that relying on participants to trawl their memories and answer an ill-defined or abstract question is inherently plagued with confounding factors (e.g. Seligman & Czikszentmihalyi, 2000). Kahn and Juster (2002) have characterised this dichotomy as remembered utility and direct utility, with both contributing to an overall picture of an individual's well-being. This mixture of long-term and short-term measures along with the similarity between some well-being factors and personality traits has led the literature to produce a somewhat muddy construct of well-being, straddling both hedonic and eudemonic realms while also including a considerable helping of environmental factors. Although modern measures of well-being (e.g. the WHOQOL 100) have been crafted to cover as much of this diverse array of factors as reasonably possible, there is little clarity on whether researchers should ask about well-being over a long period, such as a year or how people are

in general, or relatively short periods, such as how the participant feels right now or over the last few days. Unfortunately most of the questionnaire development literature does not address the choice of time period. Major governmental initiatives like the United Kingdom's Office of National Statistics (ONS, 2019) frame items as 'overall', whereas the WHO elected to ask participants to reflect over the 'last two weeks'.

The question of what length of time to ask respondents to consider their well-being over directly relates to how we distinguish mood and emotion in well-being. Beedie, Terry, and Lane (2005) argue that emotion and mood are very closely related but are typically considered as distinct constructs. However, they also raise the objection that to an individual there may be no real qualitative difference between the two. Nor is there any particularly strong agreement amongst researchers with regards to how one measures a mood as opposed to an emotion (Beedie, Terry, & Lane, 2005). In their thematic analysis of the literature as well as response from 106 of their own participants, they identified that the most commonly cited distinctions between mood and emotion were cause and duration. In this sense, emotions may be caused by a specific stimuli and be fairly short-lived, but moods are a more general long-lived state potentially caused by a sum of many stimuli (Beedie, Terry, & Lane, 2005). However, what remains unclear is what a participant is referring to when responding to a question asking "how happy have you been over the last two weeks?" - are they simply counting how many times they felt emotionally happy and using that as a reference to place a mark on the scale, or are they mentally summing these events into a more general mood rating of happiness (Brewer, 1994). Thomas and Diener (1990) investigated the absolute accuracy for positive and negative emotional recall in two studies using either a 3-week period or 6-week period. While participants in both conditions showed significant difference in recalled emotional intensity and frequency compared to actual emotional experience, with both sets tending to overestimate the intensity of their emotional experiences, those in the 6-

week condition were slightly more accurate at recalling the intensity of their positive emotions. The findings suggest that memory accuracy for emotional content is remarkably similar even up to 6-weeks, and as such it may represent a more stable choice for assessing general emotional or well-being experience.

Approaches to measuring well-being are extremely diverse, ranging from a focus on objective indicators such as income, housing, occupation and other economics and social criteria (e.g. Diener et al., 2009) to measurement of subjective psychological and emotional states (e.g. Felce & Perry, 1995), while others take a mixed approach (La Placa, McNaught & Knight, 2013). Dolan and Metcalfe (2012) recommend that well-being be investigated from three broad angles: global subjective well-being measures such as asking people to rate their life satisfaction or happiness, experiential measures asking people how they feel in the short-term across a range of emotions (e.g. anxiety, excitement, sadness etc.), and eudemonic measures reflecting feelings of control, autonomy, and purpose. It is worth noting that while these three areas are often heavily connected, some studies have identified some experiences or situations can effect one of these areas and yet have little impact on another (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004; White & Dolan, 2009), suggesting a certain level of disconnectedness between concepts that live under the well-being umbrella.

Well-being is evidently an expansive and diverse construct that contains a vast range of constructs of varying levels of relatedness. Investigating all of the variables now housed under the umbrella of well-being is beyond the scope of the present study, however it is important, following the advice of Dolan and Metcalfe (2012), to include at least a limited number of variables from each of the three major areas identified.

1.3 Anger: A mixed emotion

The blurring of the lines between "negative" and "positive" emotions is part of what has been characterised by Lomas and Ivtzan (2016) as the "Second Wave" of positive psychology. The authors argue that emotions and well-being are far more complex than a simple positive-negative dichotomy, and propose three principles to illustrate the "dialectical nature of well-being": (1) the principle of appraisal, (2) the principle of co-valence, and (3) the principle of complementarity. In essence, these principles state that (1) categorising any given emotion as positive or negative is largely context-dependent since even classic positive emotions such as optimism can, at times, be detrimental to well-being, (2) emotional states rarely tend to be made up of only one clear and distinct, and (3) well-being and ill-being can be modelled as two distinct dimensions that can coexist with both at high or low levels (e.g. two-factor solution for mental health produces a -.53 correlation between mental illness and mental (good) health; Keyes, 2007). To fully understand the role of different emotions in mental health, a thorough examination of their relationships with a wide range of mental illness and mental well-being factors is necessary. Due to its prominence in mental illness and its mixed set of characteristics, our understanding of anger would benefit greatly from examination under the perspective of second wave positive psychology.

Many researchers have followed the classical view of anger in which anger is characterised by defining features such as the attribution of blame and then further broken down into specific subcategories (Russell & Fehr, 1994) – such as fury, irritation, and annoyance (e.g. Clore & Ortony, 1991; Scherer, 1984). However, Berkowitz (2012), in his latest review of anger, argues that anger cannot be neatly parcelled into specific subtypes, and that all expressions of anger are "variations" on a prototypic state. In this view the only difference between fury and irritation is intensity, besides which they are not fundamentally different (Speilberger & Reheiser, 2010). Concepts such as attribution of blame and goal

frustration are common causes of anger, but are not defining characteristics. For example, Shaver, Schwartz, Kirson, and O'Connor (1987) note that neither blame nor goal frustration necessarily lead to anger and that individual views about whether the "frustration, interruption, power reversal, or harm is illegitimate" is the most common feature in predicting whether someone became angered by the event. However, even legitimacy is not the deciding factor in whether someone experiences anger as many become angered even when legitimately thwarted (Berkowitz, 2012). Berkowitz goes on to note that anger can be elicited from simple unpleasant experiences devoid of clear goals and blame (e.g. high temperatures; Anderson, 2001), and concludes that anger is a fuzzy concept which is more accurately linked to aversive events in general than to specific opportunities to assess legitimacy, blame worthiness, or goals.

1.4 Anger and mental health

While anger may be comprised of both positive and negative affectual elements, it is strongly associated with psychological ill health. Barrett et al. (2013) note that episodes of extreme anger, or anger attacks, have been found to be common occurrences for psychiatric patients in general (Newman, Fuqua, Gray, & Simpson, 2006), patients with depression (Winkler et al., 2005), patients with bipolar depression (Perlis et al., 2004), patients with anxiety disorders (Moscovitch, McCabe, Antony, Rocca, & Swinson, 2008), and patients with posttraumatic stress disorder (Orth, Cahill, Foa, & Maercker, 2008), with prevalence rates ranging from 28% to 62%. They posed two possible explanations for the high prevalence of anger in mental health disorders: (1) anger is used to reduce feelings of anxiety or fear (Foa, Riggs, Massie, & Yarczower, 1995), (2) mood disorders are linked to problems with anger regulation (Luutonen, 2007). The goal disruption theory of anger (Berkowitz, 1993; Shaver et al., 1987) offers another possible explanation: psychological ill health impairs the individual's ability to achieve their goals, resulting in a greater number of

frustrating experiences and therefore more frequent episodes of anger. The first explanation leads to the hypothesis that anger may attenuate the impact of anxiety, as it may be a more comfortable emotion to experience. The second suggests that increased anger is linked to reduced emotional stability. The goal disruption theory connects increased anger to inability to meet goals and objective.

1.5 Anger and Depression

Busch (2009) notes that, although anger and depression are frequently comorbid, there is considerable variation in the presentation of anger amongst patients with depression – ranging from denial and suppression of anger to outward presentation and overt hostility. While increased levels of anger have been linked to depression, the precise role of anger is unclear (Baeg, Wang, Chee, Kim, & Kim, 2011; Newman, Fuqua, Gray, & Simpson, 2006; Rude, Chrisman, Burton, Denmark, & Maestas, 2012). Abi-Habib and Luyten (2013) examined two personality dimensions related to anger vulnerability in depression: self-criticism and dependency. While both were associated with high levels of anger they differed on where anger was directed, with self-criticism being associated with low anger control and anger directed towards others and dependency with higher anger control and anger directed inwards. It is unclear whether anger levels and style are the cause or result of the depression style in this study. The literature on anger expression in depression presents a mixed picture with some studies (e.g. Koh, Kim, & Park., 2002) finding outward expression of anger to be more common, while others find anger directed inward and hidden to be equally as probable in people with depression or even more probable (e.g. Schless, Mendels, Kipperman, & Cochrane., 1974; Woldersdorf & Kiefer, 1998; Goldman & Haaga, 1995).

Anger has been linked to several core features of depression. These include considering how anger rises in reaction to threats to self-esteem (Busch, 2009). One of the

core symptoms of major depressive disorder in the DSM-V is feeling worthless or experiencing excessive levels of guilt and shame, both of which characterise low levels of self-esteem (DSM-V, 2013; Baumeister, Smart, & Boden, 1996; Velotti, 2017). Anger, hostility, and aggression are thought to protect self-esteem from guilt by increasing the likelihood of perceiving external threats and blaming others for misfortune (Barazzone & Davey, 2009). Research on feelings of shame has also suggested a similar protective role for anger, with blame being shifted towards others and anger growing as a consequence (Lewis, 1971). Again, anger is thought to play a protective role by increasing feelings of control and motivating corrective actions (Tagney & Dearing, 2002). In this sense anger can help to defend against a core symptom of depression. However, this can come at a cost as Busch (2009) points out that using anger to defend one's self-esteem can lead to disruption of interpersonal relationships.

1.6 Anger and Anxiety

Anger and anxiety have long been linked together as some of the driving emotions in the polar choice between fight or flight, sharing highly similar biological underpinnings (Barlow, 2002). Deschenes, Dugas, Fracalanza, and Koerner (2012) note that the key predictor in whether an individual becomes angry and decides to fight, or becomes anxious and flees from threats is their perceived level of mastery over the situation. Considering this fine dividing line of perception, it is no wonder that the anger is frequently found to be comorbid with anxiety disorders (e.g. Moscovitch, McCabe, Antony, Rocca, & Swinson, 2008; Erwin, Heimberg, Schneier, & Liebowitz, 2003; Olantunji, Ciesielski, & Tolin, 2010). Anxiety has also been linked with a lower threshold for anger and poorer anger regulation ability (DiGiuseppe & Tafrate, 2007; Erdem, Celik, Yetkin, & Ozgen, 2008). Deschenes et al. (2012) posit that both anger and anxiety share the same cognitive biases and point to research showing that both lead to an increase in threat perception (Barrazone & Davey, 2009), similar

attentional patterns (Owen, 2011) and dislike of uncertainty and unfairness (Sexton & Dugas, 2009; Barclay, Skarlicki, & Pugh, 2005). Thus the deciding factors as to whether an individual becomes angry or anxious may fall down to small differences in situational perception.

Foa et al. (1995) argued that fear is more uncomfortable than anger, due in part to anger having features with positive emotional valence, and this leads many anxiety patients to adopt it as a replacement emotion in order to protect themselves from feelings of fear. In their study of PTSD patients, they found that those with higher levels of anger were also more resistant to exposure therapies, raising concerns that anger may also influence how responsive mental illnesses are to different treatments. Whether this effect arose from anger-related behaviours such as non-compliance with therapists, or higher anger being associated with worse PTSD is unclear. Olatunji, Ciesielski, and Tolin (2010) note that anger and fear are physiologically similar, sharing considerable overlap in activation of the amygdala (Whalen et al., 2001), temporal and frontal cortical areas (Kimbrell et al., 1999), and physiological markers such as heart rate and blood pressure (Stemmler, Heldmann, Pauls, & Scherer, 2001). A longitudinal study of post-traumatic stress disorder (PTSD) patients found that PTSD symptoms predicted later measures of anger, and that initial measures of anger did not predict symptoms of PTSD, thus providing some evidence that anger is a response to, or consequence of, a major anxiety disorder (Orth et al., 2008). This relationship remained consistent across two studies, the first using a historical sample comprised primarily of females from the USA, and the second mixed gender sample being drawn from Germany. It is worth noting that both samples consisted of participants who acquired PTSD through being the victim of crime, and that the type of traumatic event has been previously shown to influence the strength of the relationship between PTSD symptoms and anger (Orth &

Wieland, 2006). As such, these results may limit themselves to a certain style of anger or PTSD and may not necessarily apply to all people with PTSD.

The above suggests that anger and anxiety should be positively correlated, with anger-in being the most closely associated expression style. The concept of anger acting as a replacement emotion for fear, perhaps due to it being a more comfortable emotion, suggests that anger may be protective response to fear reactions in anxiety.

1.7 Anger and Stress

Novaco (1978) characterises anger as an affective reaction to stress such that anger arises based on the individual's cognitive appraisal of a stress-inducing situation. However, other researchers have pointed out that this is not a one-way relationship, showing that the act of expressing anger can be stressful and that it can result in creating an even more stress-inducing situation (Tavris, 1989; Diong & Bishop, 1999). Diong and Bishop (1999) also found a negative relationship between high levels of anger expression and use of effective coping strategies for dealing with stress.

These findings suggest that stress and anger should have a close relationship as they are likely to be mutually causal, and that expression of anger may be linked to absence of effective coping strategies. Anger may represent a crude attempt to control stress when positive coping strategies are unavailable. However, as openly expressing anger can itself be a stressful experience, and is likely to lead to further stress-inducing situations, it may compound the negative influence of stress.

1.8 Anger and Severe Depression Symptoms

Anger may also play a key role in more severe depression symptomology. Hawkins and Cougle (2013) found that, in a nationally representative sample, anger and anger expression were significantly related to suicidal ideation and suicide attempts. The authors

speculated that increased levels of anger may prompt more extreme behaviours, potentially by increasing levels of emotional discomfort. They also suggested that anger expression, in the form of intermittent explosive disorder, may cause declines in social support that leads to greater suicide risk. Intermittent explosive disorder has often been characterised by impulsivity, rage and verbal or physical outbursts (Coccaro, 2012). Beck, Kovacs and Weissman (1979) scale for assessing suicidal intention contains two items relating to feelings of control and capability. The scale rates suicidal intention higher for participants that say they feel out of control but also feel competent and courageous. Novaco (2010) has argued that anger is associated with greater feelings of control as well as supressing fear – these anger-related feelings appear to overlap inconsistently with the items from the suicidal intention scale. However, one subtype of anger, rage, is characterised as uncontrolled and feeling capable of previously impossible behaviours (Klemke & Allen, 2008). While anger in general may be a poorer fit for suicidal depression, more distinct types of anger like rage may be a stronger candidate.

Self-harm has also been linked to increased levels of anger, particularly directed towards the self (Laye-Gindhu & Schonert-Reichl, 2005). Laye-Gindhu and Schonert-Reichl (2005) found that anger, both directed at others and at oneself, were among the most common reasons for motivating self-harm selected by a sample of 424 adolescents. The authors also found that problems with controlling anger and being uncomfortably angry were associated with greater likelihood of self-harming. They proposed that self-harm may be used as an emotional coping mechanism, though other researchers have suggested that anger and aggression directed outwards may be used as an alternative coping mechanism to self-harm in some populations (Dyer et al., 2009). However, both studies found that self-harm was associated with feelings of lower self-esteem, guilt and shame – all of which have been

proposed either as triggers of anger, or as emotions that anger is used to suppress (Novaco, 2010).

1.9 The Functional Aspects of Anger

Beyond affect and approach/avoidance behaviours, anger also serves a diverse range of functions. Novaco (2010) suggested several core functions of anger including energizing behaviour via increased arousal and reduced inhibition, the focusing of attention on threat stimuli, communicating displeasure, protecting self-esteem by externalising blame, suppressing fear responses, creating social distance, generating feelings of control, and triggering aggressive behaviours. These functions are useful in certain amounts and certain situations, suggesting that anger is not always maladaptive and may indeed be a useful or appropriate response in many contexts. Thus, finding higher than usual levels of anger in some mental health conditions may be a result of anger becoming a more useful or expedient tool for compensating for impairments brought about by those conditions. The recalibrational theory of anger argues that the ultimate functional purpose of anger is to cause others to value the angry individual's welfare more highly (Sell, Tooby, & Cosmides, 2009), noting that those who feel entitled to better treatment are typically more prone to anger. In this sense, anger is just another tool for securing a higher quality of life, and it is perhaps unsurprising that individual's with mental health conditions are utilising this tool more frequently. Evidence for this perspective comes from studies showing that, in computer-mediated negotiations, participants were found to be more likely to concede to their opponent's demands and make smaller demands of their own if they were given information suggesting their opponent was angry (van Kleefm De Dreu, & Manstead, 2004). Presenting an angry facial expression may also confer several social benefits. Marsh, Adams, and Kleck (2005) found that participants associated greater levels of dominance, strength, masculinity, and maturity with angry expressions compared to neutral and fearful expressions. Thus,

presenting oneself as angry may offer considerable short-term benefits in interpersonal negotiations.

The role of anger in psychological health may be illuminated to some extent by examining when psychologically healthy individuals pursue certain emotions. Kim et al., (2014) found that psychologically healthy participants wanted to experience lower levels of anger compared to those with poorer psychological health. However, they also found that in situations where anger was perceived to be useful, these same healthy participants wanted to experience higher levels of anger. The authors concluded that, when context demands it, psychologically healthy people can be highly motivated to seek negative emotional states if they perceive potential benefits such as greater coping ability or greater social influence. Thus, it is possible that when people experience depression or anxiety, they are also motivated to experience anger in order to extract the perceived benefits of the emotion to improve their mental health.

1.10 Does Expression Style Matter?

There has been a recent growth in interest in dimensions of anger (e.g. frequency, duration, intensity, and expressions style), and how these dimensions may be differentially related to psychopathology. Stewart et al. (2008) summarised findings over the last two decades indicating that those who suppress their anger (anger-in) are more likely to have increased blood pressure and greater risk of cardiovascular disease, whereas those who express their anger (anger-out) are more closely associated with self-esteem issues, addiction, eating disorders, and impulse control problems. Further research has linked anger-out with depression (Brody, Haaga, Kirk, & Solomon, 1999), and anger-in with anxiety disorders (Feeny, Zoellner, & Foa, 2000). Stewart et al. (2008) also note that the evidence for associations between depression and anger-in and anxiety and anger-out are mixed (e.g.

Deschenes et al., 2012). Anger expression style has also been found to be a more important predictor of health status than trait anger (disposition to becoming angry), with verbal discussion of anger feelings being linked to positive health outcomes, and behaviourally acting out anger linked to negative outcomes (Thomas, 1991). Intensity of anger has been positively associated with the severity of depression (Riley, Treiber, & Woods, 1989), but does not appear to drive severity in generalised anxiety disorder, where presence of anger-in appeared to be the strongest predictor of severity (Deschenes et al., 2012). The role of anger duration, both in terms of length of average anger episode and the time over which anger has generally been heightened, have largely been unresearched. This may stem from the lack of duration-specific items in the major scales (e.g. the STAXI has no duration items related to either episodes or total heightened anger time, the NAS-PI contains two general rumination items, and one item listed in the duration category: "When I think about something that makes me angry, I get even more angry". Unfortunately this item does not actually appear to measure duration in any way). As such, while there are many suggested core dimensions of anger, only expression style has been thoroughly examined in relation to differentiating mental health disorders. Both anger frequency and intensity have been linked to the presence, and in some cases severity, of common disorders, but the influence of anger duration has largely gone unexplored.

1.11 The impact of anger

Various other aspects of health and life can also be detrimentally affected by high levels of anger. Anger associated with increased risk for physical conditions such as coronary disease (Williams et al., 2000), myocardial infarction, arrhythmia, and strokes (Mostofsky, Penner, & Mittleman, 2014), and weakened immune responses to vaccines (Costanzo et al., 2004). Smith's (1994) transactional model of anger argues that not only do angry individuals experience less social support and greater levels of interpersonal conflict, but that their angry

state is often the direct cause of their poorer social experience. The authors link the decline in social state to increased hostility, mistrust towards others, externalising of blame, and greater levels of aggression and antagonism coming from the angry individual. They also propose that this declining social state and breakdown in relationships can lead to positive feedback whereby anger is maintained for longer periods due to the decline in social support. Smith, Sanders, and Alexander (1990) found that participants who reported experiencing anger frequently also reported significantly higher levels of familial conflict and worse marital outcomes when compared to those low in anger. Similarly, Diong et al. (2005) found that reported levels of anger correlated negatively with perceived levels of social support resources, leading the authors to suggest that angry individuals may be less likely to seek and/or accept social support from others. Increased levels of social support are associated with patients utilising active coping styles, reduced levels of depression (Holohan, Moos, Holohan, & Brennan, 1995), reduced functional impairment in depression (Travis et al., 2004), and increased chance of recovery (Sayal et al., 2002). Social support has also been linked to resistance to mental illness (e.g. those with high social support were found to be less likely to develop PTSD following trauma exposure in Vietnam; Boscarino, 1995). Since social support has been found to be crucial for improving or maintaining mental health, anger may be eroding key buffers to stress and reducing opportunities to improve psychological well-being.

High levels of anger also pose a further problem for mental health patients – treatment resistance. Cassiello-Robbins et al. (2015) highlight in their review of anger in emotional disorders the treatment problems posed by comorbid anger issues. Drawing on findings from Sugaya et al. (2015) who linked the presence of hostility in panic disorder to increased disorder duration, and their own findings linking increased aggression with reduced cognitive behavioural therapy (CBT) treatment efficacy in panic disorder, the authors concluded that

behaviours and feelings related to anger can be associated with increased severity, duration, and reduced response to treatment. Surprisingly this pattern of treatment resistance is not limited to therapies such as CBT – Fisher et al. (2015) found that depressed patients with high anger/hostility scores had significantly lower response rates to antidepressant treatment compared with patients scoring lower in anger/hostility. Meichenbaum (2005) also highlighted a group of problems posed by comorbid anger in treating mental health disorders including: anger being directed towards the therapist, increased need to assess violence risk, impatience, frustration, and unrealistic goals leading to non-compliance with the treatment program. Similarly, Newman (2011) found that chronic anger posed a challenge in CBT as patients often placed blame for problems on other people, and resisted the idea that they needed to make any changes themselves.

Not only is anger a problem for the patient, due to its strong links in instigating aggression (Anderson & Bushman, 2002; Hortensius, Schutter, & Harmon-Jones, 2012) it has long been a problem for the treating clinician as well. In a study of psychiatric hospital patients, Novaco (1997) found that 14% had assaulted another person within the hospital in the last 30 days. A recent investigation by the British Broadcasting Corporation (2017) found that assaults on staff in National Health Service mental health trusts had risen 25% from 33,620 incidents in the 2012-2013 period to 42,692 in the 2015-2016 period. This recent rise was attributed to staff shortages and increased use of agency staff. Gillespie, Gates, Miller, and Howard (2010) highlighted the risks facing healthcare professionals, citing studies finding that psychiatric disorders were a factor for between 35% and 87% of incidences of patient violence directed towards staff (Gates, Fitzwater, & Succop, 2003; Mandiracioglu & Cam, 2006). Several studies have characterised patient anger, the precursor to aggression, as being a reaction to perceived loss of freedoms (e.g. Taylor, 1979). However, Craig (1982) found that different clinical populations had different likelihoods of assaulting staff despite

experiencing similar levels of agitation and anger. For example, 13-21% of patients with schizophrenia were marked by clinicians as “assaultive”, yet patients with mania often exhibited similar or higher levels of agitation and anger yet none were marked as “assaultive”. A better understanding of how anger relates to mental health, well-being and the role it plays may help identify new avenues for anger reduction and have a knock-on effect of reducing the amount of physical or verbal violence directed at hospital workers from mental health patients. It may also help explain why certain clinical populations pose a greater risk to staff, and highlight productive avenues for research or management.

Examining the relationships between anger components and well-being in a general population may help to develop an understanding of whether the relationships between anger, indicators of mental ill health and well-being persist in the general population or if they represent unique manifestations specific to clinical levels of distress. The findings may also be of value to attempts to understand the relationships, function and purpose of emotions in ordinary human life and provide a useful contrast when investigating the same relationships in clinical populations.

1.12 The Present Research

The present study aims to identify the relationships between anger and a diverse range of features of people’s lives, behaviours, and emotional well-being. These factors range from global well-being questions, to individual facets of well-being such as positive affect, self-esteem, and sleep. It will also re-examine the links between anger and depression, anxiety, and stress in a broader manner, rather than limiting the scope to just diagnosed conditions. The final aim of the study is to identify potential moderating effects of anger on the relationships between mental ill health and areas of well-being, in order to lay the

groundwork for further investigations into a ‘protective’ or ‘functional’ use of anger in the face of psychological distress.

In order to understand how anger relates to well-being, the present study follows a similar approach to Barrett, Mills, and Teesson (2013) and Hawkins and Cougle (2011) by administering a comprehensive well-being questionnaire to a large sample of participants. This questionnaire expands on those used in previous research by including a broad range of mental health indicators, including stress, low mood/depression, suicidal ideation/self-harm, and anxiety, rather than specific diagnosed conditions, as well as several core areas of wellbeing. These core areas of wellbeing include both global-style items like “My well-being has been good” and more specific sub-scales covering positive affect (e.g. feelings of joy, being in a good mood, feeling engaged etc.) and self-esteem, as well as some less direct well-being-associated areas like sleep quality and resilience. This is by no means an exhaustive coverage of factors related to well-being, but provides a reasonably diverse base in order to determine how anger relates to global-level well-being, core psychological well-being elements, core physical well-being indicators (e.g. fatigue and sleep), and core social areas (e.g. social support and good relationships). It is intended that this will help identify whether anger is related to specific areas of well-being, or if it may be more holistically related.

Due to the close association and frequent comorbidity between anger and traditionally negative emotional states like stress, anxiety, and depression, measuring these variables allowed them to be included in regression models thus helping to control for their influence on well-being and allow the specific relationship with anger variables to be better isolated. It also allows for basic comparisons to identify whether the relationship between anger and well-being follows a similar pattern to these negative emotions, or if it diverges due to the positive aspects of anger posed in the literature review above. These factors have not commonly been controlled for in the existing literature, and there it is possible many of the

findings discussed above result from shared variance between anger components and other indicators of mental ill health.

The literature review above highlights the multi-faceted nature of anger, showing that not only is variation in anger intensity of potential interest, but also how anger is typically expressed (anger-in versus anger-out), as well as the oft neglected duration of anger episodes. Whilst the intensity of anger has been positively correlated with symptom intensity in mental health disorders (e.g. Riley et al., 1989), and anger expression style with different specific diagnoses (e.g. anger-in and depression; Brody et al., 1999; anger-out and anxiety; Feeny, Zoellner, & Foa, 2000), it is currently unknown how these relate to well-being, both at a global level and at a constituent/component level. Considering the potential functional applications of anger suggested by researchers like Novaco (2010), Lewis (1971), and Sell, Tooby, and Cosmides (2009), along with the links between anger and positive valence (e.g. Harmon-Jones et al., 2009), and the characterisation of anger as a response to negative emotions like fear and low self-esteem (Foa et al., 1995; Busch, 2009), it is not unreasonable to assume that anger may in some cases be healthy and associated with high levels of well-being.

Based on the discussions above, the present study will focus on addressing the following hypotheses in order to better understand the role of anger in well-being and whether there is any support for the theory that anger is a defensive reaction to negative emotional states like depression, anxiety and stress. The first two hypothesis concern the relationship between anger and indicators of poor mental health.

Hypothesis 1: All anger factors will be significantly correlated with negative emotional states including low mood/depression, anxiety, stress and self-harm/suicidal ideation, and more broadly the presence of a mental health condition.

Hypothesis 2: As found in previous studies, anger-out will be significantly positively associated with low mood/depression, and anger-in with anxiety.

These two hypothesis seek to confirm findings from previous studies regarding the relationships between anger factors and poor mental health.

While anger has typically been viewed as a negative emotion, the literature review above suggests that it may not have a consistently negative impact, and instead could be beneficial for specific areas of well-being including self-esteem, positive affect, motivation, feeling energised, and coping. Equally, anger has been linked to poor emotional stability and creating social distance, directly impairing social relationships. These are reflected in the specific hypotheses below:

Hypothesis 3: Higher levels of anger will be significantly associated with poorer global well-being and life satisfaction after controlling for low mood/depression, anxiety, stress, and self-harm/suicidal ideation.

Hypothesis 4: Higher levels of anger will be associated with better self-esteem after controlling for low mood/depression, anxiety, stress, and self-harm/suicidal ideation.

Hypothesis 5: Higher levels of anger will be associated with high levels of positive affect after controlling for low mood/depression, anxiety, stress, and self-harm/suicidal ideation.

Hypothesis 6: High levels of anger will be associated with improved motivation, reduced fatigue, but poorer goal orientation after controlling for low mood/depression, anxiety, stress, and self-harm/suicidal ideation.

Hypothesis 7: Higher levels of anger will be associated with lower emotional stability after controlling for low mood/depression, anxiety, stress, and self-harm/suicidal ideation.

Hypothesis 8: Higher levels of anger will be associated with worse social relationship quality and less social support after controlling for low mood/depression, anxiety, stress, and self-harm/suicidal ideation.

Hypothesis 9: Higher levels of anger will be associated with improved resilience after controlling for low mood/depression, anxiety, stress, and self-harm/suicidal ideation.

By controlling for the frequently comorbid negative emotional states, the independent relationship between anger and different facets of well-being can be identified. As anger is typically characterised as a negative emotion, it is still expected that it will have negative relationships with measures of well-being.

If anger arises as a reaction to negative emotional states and poor well-being, and is used as a psychological defence against other negative states or as a replacement emotion, then there should be evidence of moderating effects from anger components on the relationship between negative emotional states and well-being. This should be particularly evident in the areas highlighted in previous research such as self-esteem and anxiety (Novaco, 2010).

Hypothesis 10: As per Novaco (2010) and Busch (2009), higher levels of anger should moderate the relationship between negative emotional states and self-esteem, particularly with regards to depression.

Hypothesis 11: Anger-out will be associated with attenuation of the relationship between indicators of poor mental health and well-being factors, and anger-in will have an opposite set of relationships.

This prediction stems from findings from Roohafza et al. (2014) that forms of emotional suppression are linked to poorer coping mechanisms.

While no previous research has been done on anger duration it is reasonable to assume that higher levels of anger duration may be indicative of poorer emotional regulation capacity in general and therefore likely to be linked to stronger negative relationships well-being factors and indicators of mental ill health.

Hypothesis 12: Anger duration will negatively moderate the relationships between well-being factors and mental ill health.

2. Methods

2.1 Participants

A total of 1336 participants began the Well-Being questionnaire, of which 1045 completed all Core Well-Being items, and 601 completed further anger items. Participants were primarily draw from the University of Bristol student body, with 492 responding to an email advert, 255 completing the questionnaire in exchange for Research Pool credit points, and 589 responding to an advert placed on the School of Experimental Psychology's website. The 1081 participants responding to the adverts were incentivised by the opportunity to be included in a prize draw consisting of five chances to win £100, or for course credits.

Participants were predominantly white (85.9%), female (75.3%), non-religious (67.0%), in their early twenties (M = 26.3), studying at university (75.9%), unemployed (53.7%), and holding either an A level (47.2%) or undergraduate education (27.8%). Participant metric tables can be found in Appendix A.

2.2 Materials

2.2.1 Measure of well-being

Well-Being components were assessed using the Bristol Well-Being Survey, a 30 minute self-report survey that asks participants to select how strongly they agree with 224 statements relating to 32 areas of psychological and environmental well-being ranging from anxiety and depression to social support and financial security. Participants were also able to rate how important each of these areas of well-being was to them. The presence of a current mental health condition was assessed via a simple 'Yes/No' self-report item.

Participants were asked how strongly they agreed that the statements reflected their experience over the last six weeks, responding on a 10-point semantic differential scale with bipolar anchors (see Figure 1 for example). This design was recommended by Preston and Colman (2000) who found that respondents prefer 10-point scales over 5-point and 7-point scales, and the design is associated with reduced acquiescence bias as well as slightly improved validity and data-fit (Friborg, Martinussen, & Rosenvinge, 2006; van Beuningen, van der Houwen, & Moonen, 2014).

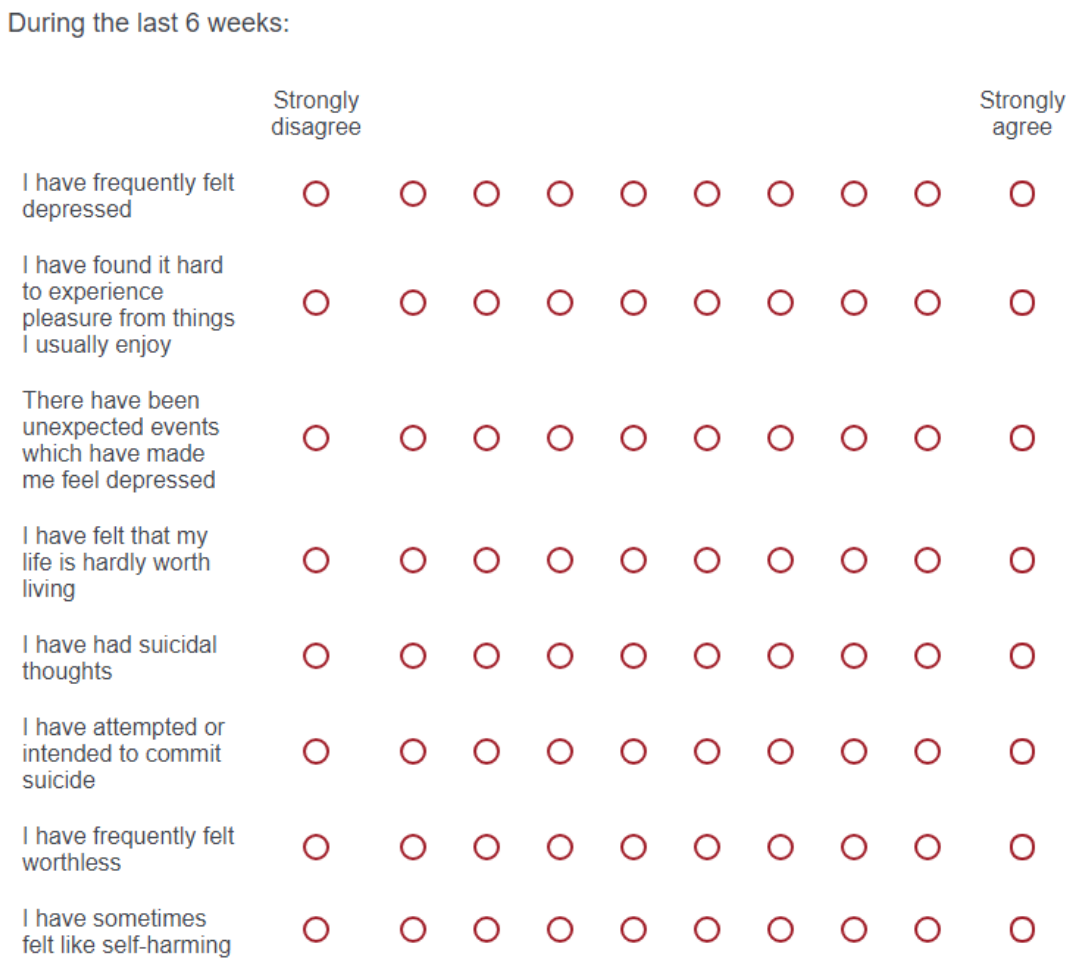

Figure 1: Example of Survey Item Format

The well-being scale has undergone several stages of development. Initial items were created to be representative of previous measures and underwent examination by ten clinical psychologists to reword items to better capture details of interest and to ensure clarity. This

ensured that both deductive and inductive approaches had been used to make initial items selections (Boateng, Neilands, Frongillo, Melgar-Quinonez, & Young, 2018). Furthermore, all items were considered in the light of Fowler's (1995) essential item characteristics including the need for consistent clarity, administration, communication of response requirements, accessibility of information, and willingness for the participant to answer the question. A pilot version of the survey was trialled with 867 participants and item performance was investigated in order to remove redundant, poorly performing, ambiguous, or to identify where new items were required for balance. Factor analytic approaches (e.g. Williams, 2016), regression models, and Cronbach's alpha tests were used to assess the performance of item categories and to eliminate items. As such, the survey used in the present study represents the second major version of the Bristol Well-Being Survey.

As the Bristol Well-Being Scale is still in development it is important to highlight that convergent validity tests with existing measures have not yet been conducted. As such, the use of factor analysis to group items is an important step towards ensuring that the constructs investigated in the present study are descriptively represented by the items loading onto the respective factor rather than simply summing the scales a relying entirely on face validity to show that the items are measuring the same construct. While this is not as rigorous an approach as demonstrating cross-measure validity, along with the steps taken toward item reduction following the initial pilot this approach helps to ensure that assumptions regarding the weighting or perceived grouping of items is treated statistically rather than relying solely on researcher judgement.

Using newly developed measures is not unusual in psychological research, nor is the lack of key validity and reliability date – Flake, Pek, and Hehman (2017) found that 46% of measures used in the average Journal of Personality and Social Psychology article appeared to either include new items or significant modification or be entirely new. Half of these only

published a Cronbach's Alpha as reliability evidence, and 19% presented no accompanying validity or reliability evidence. Only 7% of the measures identified were explicitly stated as author constructed and not previously tested. This highlights the importance of acknowledging the lack of prior statistical data about the measures used, and that forewarning can allow greater caution when interpreting results.

The present study utilised the following 16 well-being factors, including: Low Mood/Depression (4 items, α = .93), Anxiety (10 items, α = .94), Motivation (5 items, α = .84), Self-harm/Suicidal Ideation (7 items, α = .87), Positive Affect (9 items, α = .92), Sleep Quality (5 items, α = .82), Self-Esteem (4 items, α = .89), Social Life Quality (8 items, α = .89), Resilience (General) (5 items, α = .86), Resilience (Mental Health) (3 items, α = .91), Emotional Stability (5 items, α = .90), Worry (4 items, α = .91), Fatigue (5 items, α = .92), Stress (3 items, α =.87), Social Support (3 items, α = .78), and Goal Orientation (α = .83). The 6 anger factors included: Anger Intensity/Frequency (4 items, α = .81), Anger-In (2 items, α = .85), Anger Duration (2 items, α = .79), Anger Control (2 items, α = .87), Anger-Out (4 items, α =.73), and Rage (2 items, α =.71).

It is worth noting that while the use of Cronbach's Alpha is one of the most commonly used indicators of internal consistency or reliability, it has also drawn considerable criticism in recent years. Sijtsma (2009) argued that the meaning of a Cronbach's Alpha score is unclear and can be difficult to meaningfully interpret, particularly when using small sample sizes and without other similar measures for comparison. However, Sijtsma (2009) does also recognise that the reporting of Cronbach's Alpha is ubiquitous in psychological research and often a requirement imposed by journals. In combination with the item grouping managed by the exploratory factor analysis, it does offer some small insight into the consistency and potential reliability of the measures.

Utilising a self-report survey was an appropriate choice for several reasons: (1) it can be easily administered to a large sample; (2) the data produced via self-report is amenable to a wide range of statistical analysis techniques, aiding interpretability; (3) participants are the ones best placed to report on their feelings and emotional content from the last 6 weeks, particularly those that are not open to direct observation; (4) participants are able to provide data anonymously, reducing the influence of confounding factors such as social desirability or the artificiality of experimental settings (Paulhus & Vazire, 1991). However, it is worth recognising that these advantages are accompanied by a range of disadvantages, including self-reporter limitations such as being unable to recall all of the information relevant to making an accurate judgement in response to an item, threat of response styles such as participant acquiescence, impression management, and extreme responding (i.e. selecting the highest or lowest end of a rating scale for reasons other than an accurate reflection of reality). One severe weakness of using homogenous self-report surveys is the threat posed by common method bias. This is addressed in greater detail in the discussion section.

2.2.2 Measure of anger

Anger was assessed via 18 specific anger items designed to tap core anger features identified in the literature. These areas include anger intensity and frequency (e.g. frustration/rage), anger-in, anger-out, rumination, anger control, and anger duration (see results for anger components and related items).

2.3 Why not use existing anger scales?

Rather than utilising existing anger scales, a new set of 18 anger items was generated for the purposes of this study. This was done in order to match the formatting and time structure of the well-being survey, as well as to address several issues with the existing scales.

The most popular anger scales in use are either focused heavily on identifying trait anger or immediate anger rather than gauging anger levels over a short time period (e.g. STAXI-II, Spielberger, 1999), or miss core features of the anger landscape. For example, the Novaco Anger Scale and Provocation Index (NAS-PI; Novaco, 1994) measures many of the anger components recognized widely in the literature (Anger-In/Out, Control, Intensity etc.) but misses out on frequency of anger episodes altogether and only addresses anger duration with the following item: "When I think about something that makes me angry, I get even more angry". This item clearly does not address duration in any meaningful sense. The items are also frequently phrased in a highly colloquial manner, making them less clear than a more direct question (e.g. Anger Intensity: "When I get angry, I get really angry", "When I get angry, I feel like smashing things"). As such, new items were devised, intending to be clearer, culture neutral, and more direct than in other scales, and worded so as to gauge anger levels over the last 6 weeks rather than assessing traits or immediate feelings.

2.4 Why not use existing Well-Being scales?

The Bristol Well-Being Survey was used in place of widely known and studied measures for a number of reasons: specificity, detail, consistency, and face validity. Although many measures of Well-Being exist, ranging from the small and focused (e.g. PANAS; Watson, Clark, & Tellegen, 1988) to the large and wide-ranging (e.g. World Health Organisation 100 Quality of Life (WHOQoL; The WHOQOL Group, 1998), these measures either suffer from being too narrow to assess multiple facets of well-being, or are hampered by vague items that limit interpretation considerably. For example, measures like the PANAS (Watson, Clark, & Tellegen, 1988) cover a range of positive and negative emotional states, but do not assess wider variables such as financial security or mental health issues. The PANAS also encounters face validity issues, with multiple emotional states being considered positive or negative when they are largely ambiguous (Diener et al., 2009). For example,

being ‘alert’, ‘determined’, or ‘active’ are considered to be positive affectual states by the PANAS, and yet all are also applicable to negative emotional states such as fear. The WHOQoL (The WHOQOL Group, 1998) covers 25 separate well-being factors, but frequently sacrifices detail for expediency resulting in items like “How often do you have negative feelings, such as blue mood, despair, anxiety, or depression?” blending 4 distinct emotional states and leaving no way to tell if the participant is suffering from serious anxiety/depression or are simply a bit blue. The Bristol Well-Being Survey used items and well-being categories derived from an examination of 104 published well-being and quality of life scales, as well as consultation input from a panel of ten clinical psychologists to identify key areas of clinical interest.

The Bristol Well-Being Survey addresses these issues by covering 32 areas of Well-Being, from the psychological to environmental, and probing each area with multiple focused items, often at different intensities or levels. This approach, whilst effortful for participants, helps to ensure that higher quality data is collected.

By addressing a large range of well-being components in greater detail the Bristol Well-Being Survey provides the opportunity to examine anger in relation to a wider range of psychological and environmental features than previous studies. This approach provides greater opportunity to understand the relationship between anger and well-being, as well as potentially uncovering any paradoxical relationships that may shed light on whether anger is a purely ‘negative’ emotion or if it has underlying complexities that could be of clinical significance.

2.5 Procedure

The survey was administered online via the questionnaire designing and hosting application Qualtrics. Participants entered the survey by clicking hyper-links in emails,

visiting the University of Bristol School of Experimental Psychology website, or selecting the study in the School of Psychological Science "experimental hours" participant pool in exchange for credits. Qualtrics was chosen due to its user-friendly interface, allowing participants to exit and return to the survey where they left off. This helped encourage greater response rates as the time taken to complete the survey was quite long. Upon reaching the end of the survey, participants who were invited either via email or the School website were redirected to a separate survey where they were given the option to anonymously enter into a prize draw.

2.6 Survey Analysis

All survey data was exported from Qualtrics to SPSS and cleaned of coding and transfer errors. Exploratory factor analysis was conducted in order to reduce the variables into latent factors, this approach had the advantage of producing new variables that could act as aggregates for groups of items without arbitrarily summing items and assuming an equal weight. The SPSS factor analysis program converts the participants' scores on each loading variable into a single standardised score with a mean of 0, a normal distribution of scores across the sample, and standard deviations close to 1, thus approximately 68% of participants will score between -1 and 1 on any given factor. It also helps to highlight which items were varying in a similar manner and, in the case of the anger items, reinforce the presence of the anger components identified in the literature. Further analysis on anger and well-being was conducted using correlations, hierarchical multiple regression, and analysis of variance (ANOVA). Interaction effects between anger components and indicators of mental ill health on well-being were examined following advice from Hayes (2013). Interaction variables representing the interaction between anger components and indicators of mental ill health were generated by multiplying the respective scores together, and then these interaction variables were tested for significance in the regression model. Significant interaction effects

were then graphed using Interaction! in order to display how the relationship between well-being and mental ill health indicators changes at different levels of the anger component. These graphs show the strength of the regression relationship between the given mental ill health indicator and the well-being factor at -1 standard deviation (blue lines), the mean (green lines), and +1 standard deviation (red lines) of the anger component in question.

Factor analysis is a useful tool for reducing a large number of variables to a smaller set of latent variables comprised of their strongest loading items (DiStefano, Zhu, & Mindrila, 2009). These latent variables hold several key advantages over a simple summing of pre-existing scales. Firstly, they do not make the assumption that the scale contains the items best representing the expected latent variable, nor that each item in a scale deserves equal weight in representing the underlying construct (Neale, Lubke, Aggen, & Dolan, 2005). For example, a simple summing of a depression scale may lend equal weight to a high score on an item addressing suicidal tendencies and an item about occasionally feeling low – both would be treated as representing equal amounts of the underlying depression construct despite one dealing with a far more severe and indicative symptom. Secondly, the factor scores representing the participant's level of a given latent variable may be a better choice over using raw scores when performing multiple regression analysis (Uluman & Dogan, 2016). This is due to factor analysis removing items with high levels of multicollinearity and weighting the loading of items onto latent variables to account for shared variance. This can help to attenuate the influence of multicollinearity amongst variables thought to be measuring the same construct or latent variable.

The factor analysis results are loading tables are available in Appendix C.

2.7 Ethical Approval

The Ethics approval code for the present study is: 25051753021. The approval letter can be found in Appendix D.

3. Results

Descriptive Statistics for all factors and items can be found in Appendix B.

3.1 Anger and Mental ill health

The association between the presence of mental health conditions and higher levels of anger was assessed via a MANOVA as above. Anger scores differed significantly between participants who were currently experiencing a mental health problem compared to those who were not, $F(1, 590) = 5.01$, $p < .001$, Wilk's $\Lambda = .951$. Participants with mental health conditions reported significantly higher mean anger intensity/frequency ($p < .001$), worse anger control ($p = .005$), higher anger-out ($p < .001$), and greater levels of rage ($p = .007$). No significant differences were found for anger-in or anger duration. Table 1 compares the mean scores for both groups on the anger factors where significant differences were identified.

Table 1: Anger and Presence of Mental Health Condition

Descriptive Statistics

	Do you currently have a mental health condition(s)?	Mean	Std. Deviation	N
Anger Intensity/Frequency	Yes	.55	.88	185
	No	-.27	.85	407
	Total	-.01	.94	592
Anger Control	Yes	-.26	1.09	185
	No	.13	.86	407
	Total	-.01	.96	592
Anger-Out	Yes	.37	1.03	185
	No	-.18	.83	407
	Total	-.01	.93	592
Rage	Yes	.39	1.11	185
	No	-.20	.71	407
	Total	.014	.89	592

In order to assess the relationship between anger and poor mental health, a series of bivariate correlations were conducted to identify significant associations between anger factors and depression, anxiety, and stress factor scores.

Significant correlations were found between the low mood/depression factor and anger intensity/frequency ($r = .37$, $p < .001$), anger-in ($r = .15$, $p < .001$), anger duration ($r = .16$, $p < .001$), anger-out ($r = .12$, $p = .003$), and rage ($r = .23$, $p < .001$). No significant correlation was found with the anger control factor.

Significant correlations were found between the anxiety factor and all six anger factors: anger intensity/frequency ($r = .39$, $p < .001$), anger-in ($r = .16$, $p < .001$), anger duration ($r = .11$, $p = .007$), anger control ($r = -.11$, $p = .009$), anger-out ($r = .22$, $p < .001$), and rage ($r = .28$, $p <.001$).

A similar pattern was found between stress and all six anger factors: anger intensity/frequency ($r = .47$, $p < .001$), anger-in ($r = .14$, $p < .001$), anger duration ($r = .16$, $p < .001$), anger control ($r = -.12$, $p = .003$), anger-out ($r = .22$, $p < .001$), and rage ($r = .19$, $p <.001$).

Self-harm/suicidal ideation also correlated significantly with all six anger factors: anger intensity/frequency ($r = .37$, $p < .001$), anger-in ($r = .13$, $p < .001$), anger duration ($r = .12$, $p < .001$), anger control ($r = -.18$, $p < .001$), anger-out ($r = .26$, $p < .001$), and rage ($r = .44$, $p < .001$).Table 2 provides a summary for anger factor relationships with depression, anxiety, and stress.

Table 2: Anger correlations with mental ill health indicators

	Correlations					
	Anger Intensity/Frequency	Anger-In	Anger Duration	Anger Control	Anger-Out	Rage

Depression	Pearson Correlation	.37**	.15**	.16**	-.07	.12*	.23**
	Sig. (2-tailed)	.000	.000	.000	.083	.003	.000
	N	601	601	601	601	601	601
Anxiety	Pearson Correlation	.39**	.16**	.11*	-.11*	.22**	.28**
	Sig. (2-tailed)	.000	.000	.007	.009	.000	.000
	N	601	601	601	601	601	601
Stress	Pearson Correlation	.47**	.13**	-.16**	-.12*	.22**	-.19**
	Sig. (2-tailed)	.000	.001	.000	.003	.000	.000
	N	601	601	601	601	601	601
Self-Harm/Suicidal Ideation	Pearson Correlation	.37**	.12**	.12**	-.18**	.26**	.44**
	Sig. (2-tailed)	.000	.002	.004	.000	.000	.000
	N	601	601	601	601	601	601

** Correlation is significant at the 0.01 level (2-tailed), * Correlation is significant at the 0.05 level (2-tailed.

A regression model of the anger factors, controlling for anxiety, stress, and self-harm/suicidal ideation, significantly predicted low mood/depression, $F(8, 592) = 19.57$, $p < .001$, adj. $R^2 = .22$. Both anxiety (beta = .07, p = .05) and self-harm/suicidal ideation (beta = .20, $p < .001$) significantly predicted low mood/depression. Of the anger factors, anger intensity/frequency (beta = .36, $p < .001$) and anger-out (beta = -.17, p = .003) significantly predicted low mood/depression.

Table 3: Low mood/Depression and Anger

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
		B	Std. Error	Beta			
1	(Constant)	0.01	0.03		0.17	0.869	0.00
	Anxiety	0.13	0.04	0.14	3.36	0.001	0.02
	Stress	0.15	0.04	0.15	3.75	0	0.03
	Self-Harm/Suicidal Ideation	0.25	0.04	0.26	6.41	0	0.07
2	(Constant)	-0.00	0.03		-0.06	0.95	0.00

	Anxiety	0.07	0.04	0.08	1.96	0.05	0.01
	Stress	0.02	0.04	0.02	0.56	0.579	0.00
	Self-Harm/Suicidal Ideation	0.20	0.04	0.21	4.95	0	0.04
	Anger Intensity/Frequency	0.36	0.06	0.37	6.15	0	0.06
	Anger-In	0.04	0.04	0.05	1.15	0.252	0.00
	Anger Duration	0.06	0.04	0.06	1.50	0.136	0.00
	Anger Control	0.04	0.05	0.04	0.83	0.408	0.00
	Anger-Out	-0.17	0.06	-0.18	-2.97	0.003	0.01
	Rage	-0.03	0.06	-0.03	-0.46	0.645	0.00

a. Dependent Variable: Low Mood/Depression

A regression model of the anger factors, controlling for low mood/depression, stress, and self-harm/suicidal ideation, significantly predicted anxiety, $F(8, 592) = 21.77$, $p < .001$, adj. $R^2 = .238$. Low mood/depression (beta = .087, p = .05), stress (beta = .135, p = .003) and self-harm/suicidal ideation (beta = .264, $p < .001$) significantly predicted low mood/depression. Of the anger factors, anger intensity/frequency (beta = .223, p = .001) and anger-in (beta = .086, p = .038) significantly predicted anxiety.

Table 4: Anxiety and Anger

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
		B	Std. Error	Beta			
1	(Constant)	-0.01	0.04		-0.19	0.849	0.00
	Low Mood/Depression	0.14	0.04	0.13	3.36	0.001	0.02
	Stress	0.23	0.04	0.21	5.74	0.000	0.06
	Self-Harm/Suicidal Ideation	0.32	0.04	0.30	7.87	0.000	0.11

	(Constant)	-0.01	0.04		-0.37	0.712	0.00
	Low Mood/Depression	0.09	0.04	0.08	1.96	0.050	0.01
	Stress	0.14	0.05	0.13	3.02	0.003	0.02
	Self-Harm/Suicidal Ideation	0.26	0.04	0.25	6.00	0.000	0.06
2	Anger Intensity/Frequency	0.22	0.07	0.22	3.42	0.001	0.02
	Anger-In	0.09	0.04	0.08	2.08	0.038	0.01
	Anger Duration	0.00	0.04	0.00	-0.03	0.979	0.00
	Anger Control	0.03	0.05	0.03	0.58	0.561	0.00
	Anger-Out	0.00	0.06	0.00	-0.02	0.985	0.00
	Rage	0.00	0.06	0.00	0.03	0.975	0.00

a. Dependent Variable: Anxiety

A regression model of the anger factors, controlling for low mood/depression, anxiety, and self-harm/suicidal ideation, significantly predicted stress, $F(8, 592) = 24.88$, $p < .001$, adj. $R^2 = .26$. Anxiety (beta = .11, p = .003) significantly predicted stress. Of the anger factors, anger intensity/frequency (beta = .55, $p < .001$) and rage (beta = -.19, $p < .001$) significantly predicted stress.

Table 5: Stress and Anger

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
		B	Std. Error	Beta			
	(Constant)	-0.03	0.04		-0.79	0.433	0.00
	Low Mood/Depression	0.16	0.04	0.16	3.75	0.000	0.03
1	Anxiety	0.23	0.04	0.24	5.74	0.000	0.07
	Self-Harm/Suicidal Ideation	0.01	0.04	0.01	0.22	0.824	0.00

	(Constant)	-0.03	0.03		-1.06	0.292	0.00
	Low Mood/Depression	0.02	0.04	0.02	0.56	0.579	0.00
	Anxiety	0.11	0.04	0.12	3.02	0.003	0.02
	Self-Harm/Suicidal Ideation	-0.03	0.04	-0.03	-0.65	0.517	0.00
2	Anger Intensity/Frequency	0.55	0.06	0.58	9.91	0.000	0.16
	Anger-In	0.07	0.04	0.07	1.79	0.073	0.01
	Anger Duration	0.05	0.04	0.05	1.33	0.183	0.00
	Anger Control	0.02	0.05	0.02	0.33	0.742	0.00
	Anger-Out	-0.05	0.06	-0.05	-0.85	0.397	0.00
	Rage	-0.19	0.06	-0.20	-3.54	0.000	0.02

a. Dependent Variable: Stress

A regression model of the anger factors, controlling for low mood/depression, anxiety, and stress, significantly predicted self-harm/suicidal ideation, $F(8, 592) = 29.07$, $p < .001$, adj. $R^2 = .30$. Low mood/depression (beta = .20, $p < .001$) and anxiety (beta = .22, $p < .001$) significantly predicted self-harm/suicidal ideation. Of the anger factors, only rage (beta = .37, $p < .001$) significantly predicted self-harm/suicidal ideation.

Table 6: Self-Harm/Suicidal Ideation and Anger

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
		B	Std. Error	Beta			
	(Constant)	-0.02	0.03		-0.68	0.497	0.00
	Low Mood/Depression	0.26	0.04	0.25	6.41	0.000	0.08
1	Anxiety	0.29	0.04	0.31	7.87	0.000	0.12
	Stress	0.01	0.04	0.01	0.22	0.824	0.00

	(Constant)	-0.03	0.03		-0.85	0.394	0.00
	Low Mood/Depression	0.20	0.04	0.19	4.95	0.000	0.04
	Anxiety	0.22	0.04	0.23	6.00	0.000	0.06
	Stress	-0.03	0.04	-0.03	-0.65	0.517	0.00
2	Anger Intensity/Frequency	0.02	0.06	0.02	0.32	0.750	0.00
	Anger-In	0.07	0.04	0.07	1.93	0.054	0.01
	Anger Duration	-0.06	0.04	-0.06	-1.56	0.119	0.00
	Anger Control	-0.04	0.05	-0.04	-0.83	0.408	0.00
	Anger-Out	-0.06	0.06	-0.06	-1.10	0.271	0.00
	Rage	0.37	0.05	0.36	6.96	0.000	0.08

a. Dependent Variable: Self-Harm/Suicidal Ideation

3.2 Global Well-Being Items and Anger

My well-being has been good

The regression model significantly predicted well-being, $F(10, 590) = 61.12$, $p < .001$, adj. $R^2 = .50$. The regression analysis found that low mood/depression ($p < .001$), anxiety ($p < .001$), stress ($p < .001$), and self-harm/suicidal ideation ($p < .001$) had significant effects on well-being. Of the anger factors, anger intensity/frequency ($p = .005$), anger duration ($p = .003$), and rage ($p = .005$) significantly predicted well-being.

Table 7: "My well-being has been good" and Anger

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
		B	Std. Error	Beta			
	(Constant)	6.17	0.07		91.00	0.000	0.00
1	Low Mood/Depression	-0.90	0.08	-0.34	-10.74	0.000	0.20
	Anxiety	-0.37	0.08	-0.16	-4.70	0.000	0.04

	Stress	-0.96	0.08	-0.38	-12.08	0.000	0.25
	Self-Harm/Suicidal Ideation	-0.35	0.08	-0.14	-4.20	0.000	0.03
2	(Constant)	6.18	0.07		92.38	0.000	0.00
	Low Mood/Depression	-0.81	0.09	-0.31	-9.45	0.000	0.15
	Anxiety	-0.33	0.08	-0.14	-4.18	0.000	0.03
	Stress	-0.83	0.09	-0.32	-9.51	0.000	0.15
	Self-Harm/Suicidal Ideation	-0.38	0.09	-0.15	-4.35	0.000	0.03
	Anger Intensity/Frequency	-0.36	0.13	-0.15	-2.82	0.005	0.01
	Anger-In	-0.11	0.08	-0.04	-1.32	0.187	0.00
	Anger Duration	0.25	0.08	0.10	2.98	0.004	0.01
	Anger Control	-0.04	0.10	-0.02	-0.40	0.692	0.00
	Anger-Out	0.05	0.12	0.02	0.40	0.687	0.00
	Rage	0.33	0.12	0.13	2.83	0.005	0.01

a. Dependent Variable: During the last 6 weeks: - My well-being has been good

Life Satisfaction

The regression model significantly predicted well-being, $F(10, 590) = 42.20$, $p < .001$, adj. $R^2 = .41$. The regression analysis found that low mood/depression ($p < .001$), stress ($p < .001$), and self-harm/suicidal ideation ($p < .001$) had significant effects on life satisfaction. Anxiety was not a significant predictor of life satisfaction. Of the anger factors, anger intensity/frequency ($p = .001$) and anger duration ($p = .004$) significantly predicted well-being.

Table 8: "I have been satisfied with the quality of my life" and Anger

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
		B	Std. Error	Beta			
1	(Constant)	6.27	0.08		79.43	0.000	0.00
	Low Mood/Depression	-0.90	0.10	-0.32	-9.22	0.000	0.15
	Anxiety	-0.12	0.09	-0.05	-1.30	0.194	0.00
	Stress	-0.86	0.09	-0.32	-9.32	0.000	0.15
	Self-Harm/Suicidal Ideation	-0.55	0.10	-0.21	-5.70	0.000	0.06

	(Constant)	6.28	0.08		81.25	0.000	0.00
	Low Mood/Depression	-0.76	0.10	-0.28	-7.69	0.000	0.10
	Anxiety	-0.05	0.09	-0.02	-0.57	0.572	0.00
	Stress	-0.68	0.10	-0.25	-6.76	0.000	0.08
	Self-Harm/Suicidal Ideation	-0.47	0.10	-0.18	-4.63	0.000	0.04
2	Anger Intensity/Frequency	-0.49	0.15	-0.19	-3.31	0.001	0.02
	Anger-In	-0.06	0.09	-0.02	-0.62	0.535	0.00
	Anger Duration	0.28	0.10	0.11	2.88	0.004	0.01
	Anger Control	-0.06	0.11	-0.02	-0.55	0.585	0.00
	Anger-Out	0.24	0.14	0.09	1.74	0.082	0.01
	Rage	0.01	0.14	0.00	0.07	0.941	0.00

a. Dependent Variable: During the last 6 weeks: - I have been satisfied with the quality of my life

3.3 Anger and Well-Being Factors

A series of hierarchical regressions were also employed to identify whether anger scores significantly, and independently, predict a variety of valuable well-being markers. These regression models included the low mood/depression, anxiety, stress, and self-harm/suicidal ideation factors followed by the six anger factors in order to control for the effects of these major psychological factors.

Positive Affect

The first well-being factor to be analysed was Positive Affect. The regression model significantly predicted Positive Affect, $F(10, 590) = 16.65$, $p < .001$, adj. $R^2 = .21$. The regression analysis found that depression (beta = -.26, $p < .001$), stress (beta = -.14, $p = .002$), and self-harm/suicidal ideation (beta = -.10, $p = .035$) all had significant effects on Positive Affect. Anxiety was not a significant predictor. Of the anger factors, only anger duration was a significant predictor of Positive Affect (beta = -.17, $p < .001$).

Table 9: Positive Affect and Anger

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
		B	Std. Error	Beta			
1	(Constant)	-0.04	0.04		-1.23	0.220	0.00
	Low Mood/Depression	-0.30	0.04	-0.28	-6.96	0.000	0.08
	Anxiety	-0.02	0.04	-0.02	-0.39	0.700	0.00
	Stress	-0.19	0.04	-0.18	-4.66	0.000	0.04
	Self-Harm/Suicidal Ideation	-0.11	0.04	-0.10	-2.47	0.014	0.01
2	(Constant)	-0.04	0.03		-1.16	0.245	0.00
	Low Mood/Depression	-0.26	0.04	-0.24	-5.85	0.000	0.06
	Anxiety	0.00	0.04	0.00	-0.02	0.987	0.00
	Stress	-0.14	0.05	-0.14	-3.18	0.002	0.02
	Self-Harm/Suicidal Ideation	-0.10	0.05	-0.09	-2.11	0.035	0.01
	Anger Intensity/Frequency	-0.10	0.07	-0.10	-1.54	0.123	0.00
	Anger-In	-0.07	0.04	-0.07	-1.70	0.090	0.00
	Anger Duration	-0.17	0.04	-0.17	-3.94	0.000	0.03
	Anger Control	0.07	0.05	0.07	1.34	0.182	0.00
	Anger-Out	0.10	0.06	0.10	1.63	0.103	0.00
	Rage	0.04	0.06	0.03	0.60	0.551	0.00

a. Dependent Variable: Positive Affect

Anger factor interactions with Depression/Anxiety/Stress on Positive Affect

Interaction analyses were carried out for the anger factors and depression, anxiety, and stress in order to identify any moderating influences that they may exert on one another.

Anger and Low mood/Depression on Positive Affect

Anger-In

Anger-In and depression had a significant interaction effect (beta = -.13, p = .001), this influence is graphed below. This shows that as anger-in increases, the impact of the relationship between positive affect and depression becomes significantly stronger.

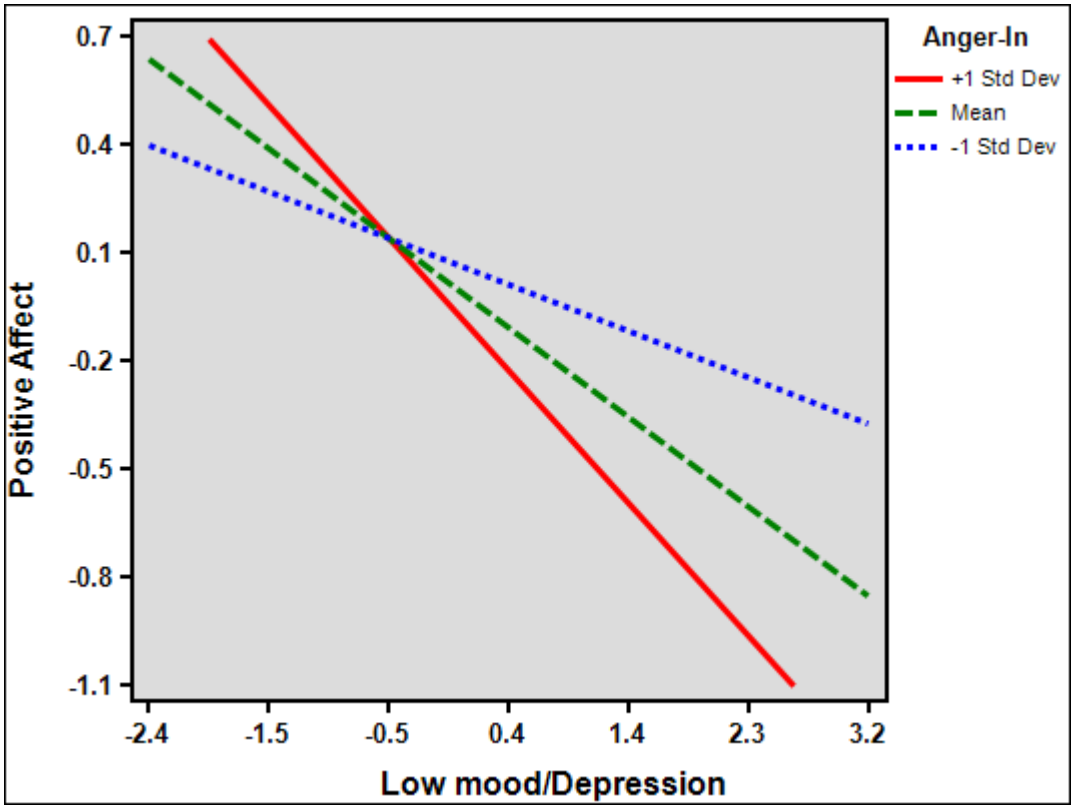

Figure 2: Relationship between Positive Affect and Low mood/Depression at different levels of Anger-In

Anger Control

Anger-In and depression had a significant interaction effect (beta = -.130, p = .002), this influence is graphed below. This shows that as anger control increases, the negative relationship between depression and positive affect becomes significantly stronger.

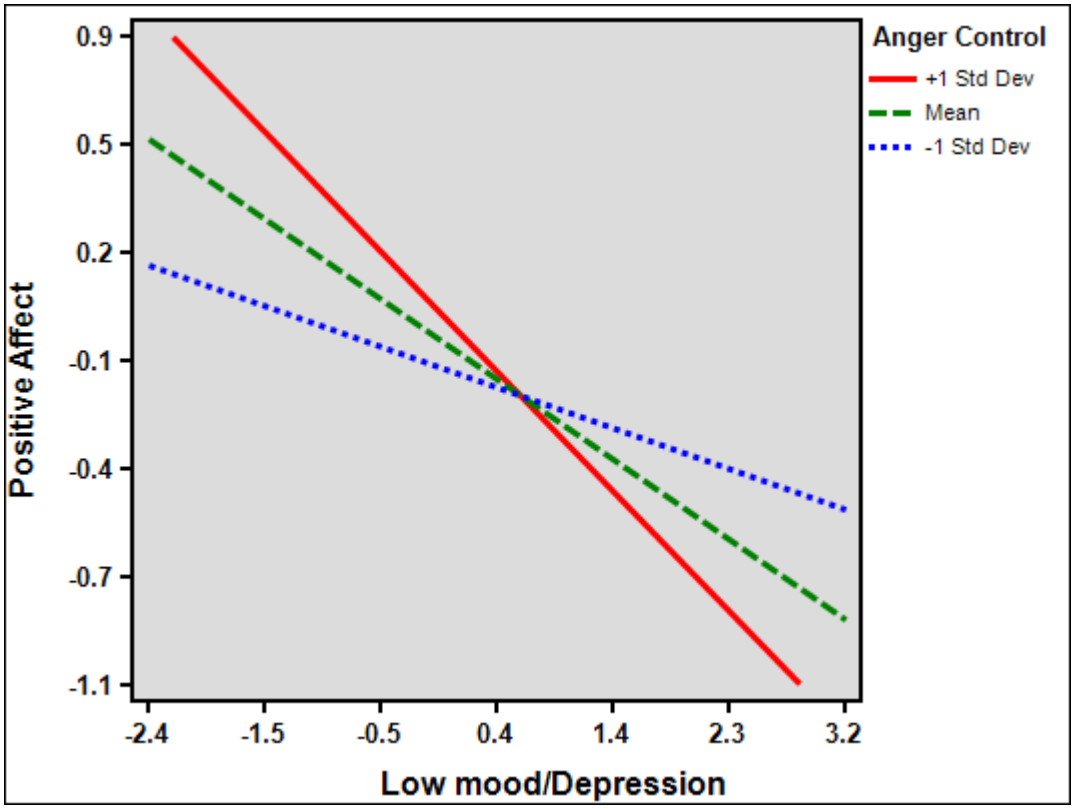

Figure 3: Relationship between Positive Affect and Low mood/Depression at different levels of Anger Control

Anger-Out

Anger-out and depression had a significant interaction effect (beta = .11, p = .014), this influence is graphed below. This shows that as anger-out increases, the negative relationship between depression and positive affect becomes significantly weaker.

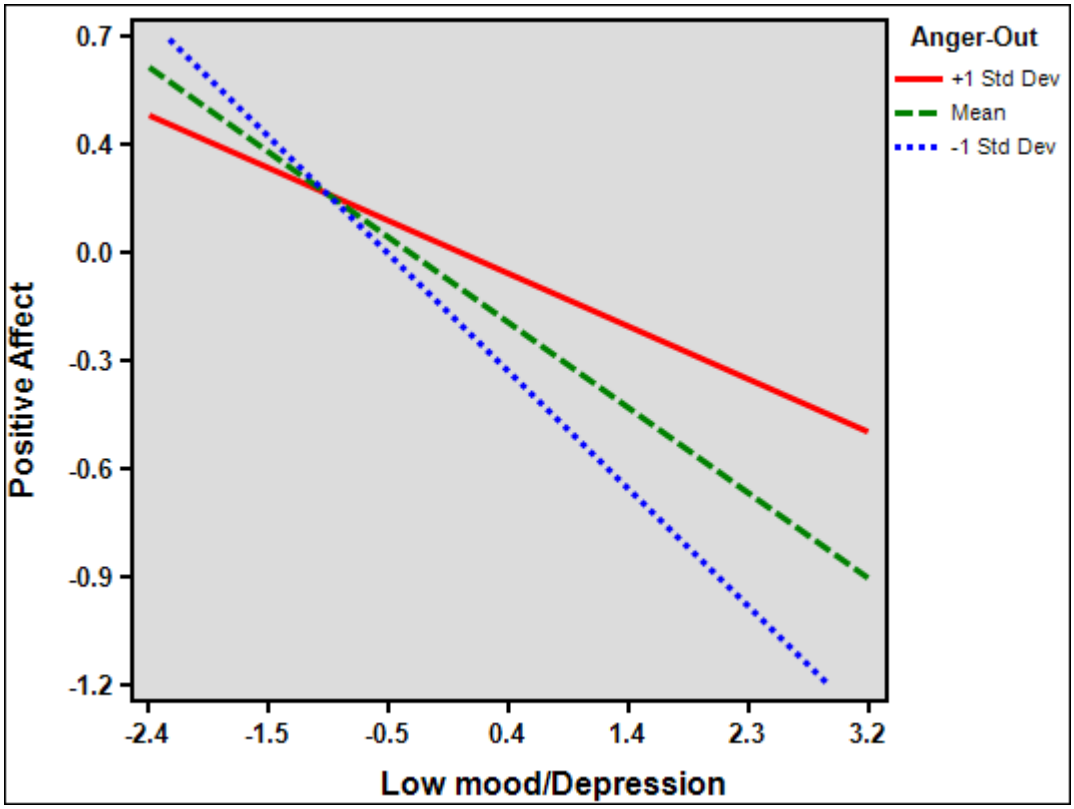

Figure 4: Relationship between Positive Affect and Low mood/Depression at different levels of Anger-Out

Rage

Rage and depression had a significant interaction effect (beta = .13, p = .003), this influence is graphed below. This shows that as rage increases, the negative relationship between depression and positive affect becomes significantly weaker.

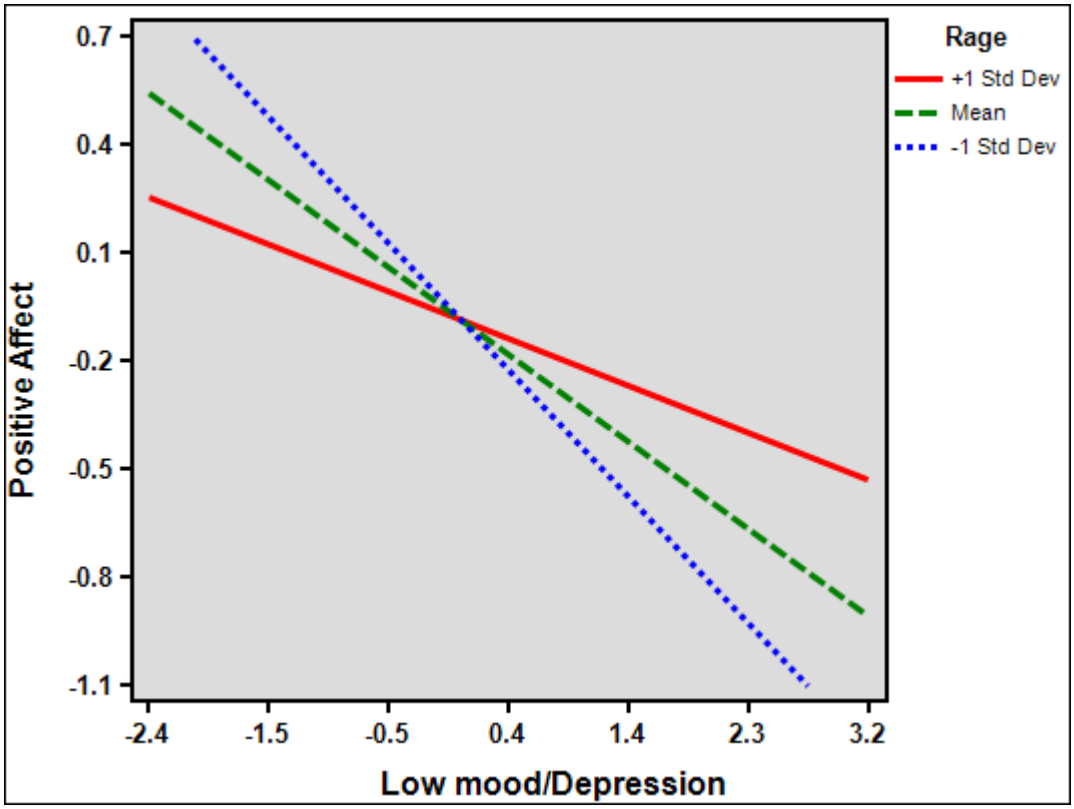

Figure 5: Relationship between Positive Affect and Low mood/Depression at different levels of Rage

Anger and Anxiety Interactions and Positive Affect

Anger-In

Anger-in and anxiety had a significant interaction effect (beta = -.08, p = .029), this influence is graphed below. This shows that as anger-in increases, the relationship between anxiety and positive affect switches from positive to negative.

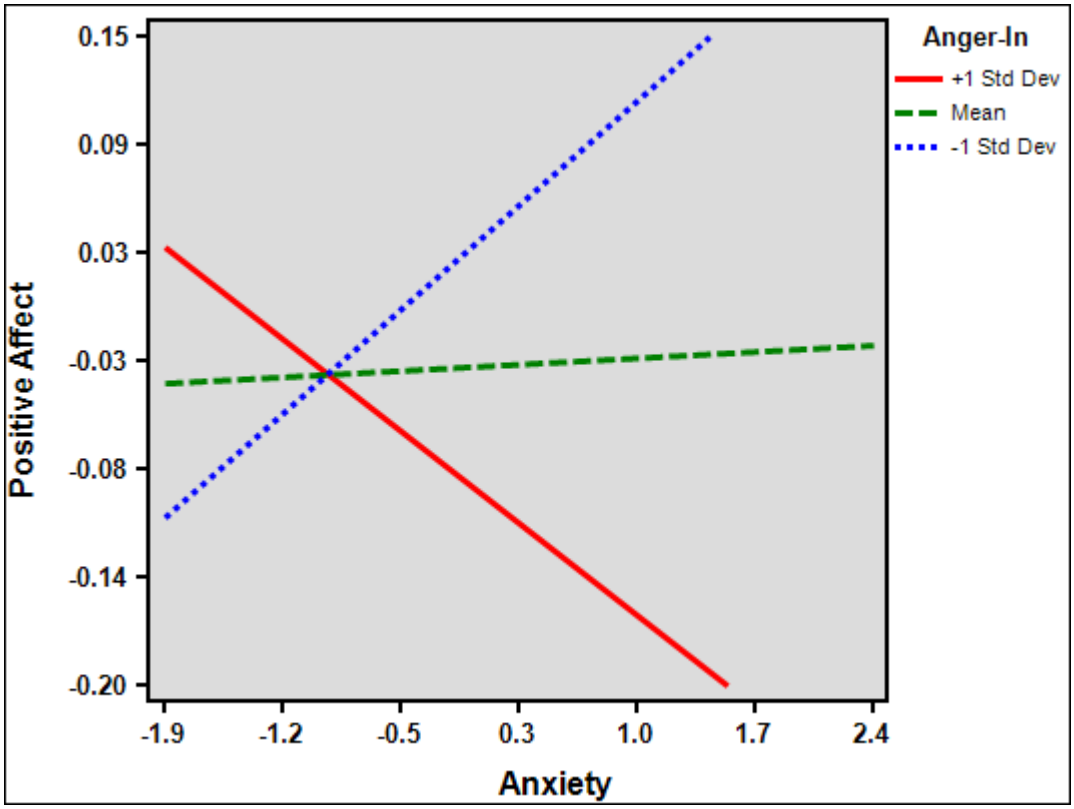

Figure 6: Relationship between Positive Affect and Anxiety at different levels of Anger-In

Anger Control

Anger control and anxiety had a significant interaction effect (beta = -.08, p = .023), this influence is graphed below. This shows that as anger control increases, the relationship between anxiety and positive affect switches from positive to negative.

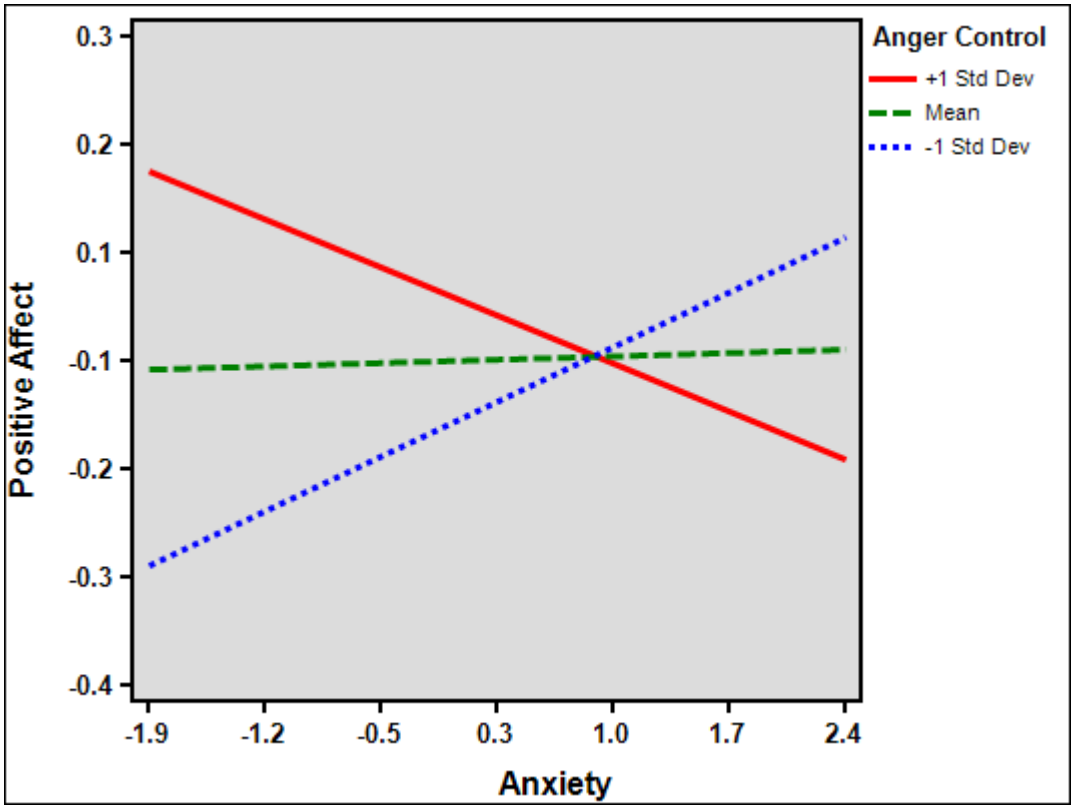

Figure 7: Relationship between Positive Affect and Anxiety at different levels of Anger Control

Anger-Out

Anger-out and anxiety had a significant interaction effect (beta = .13, p = .001), this influence is graphed below. This shows that as anger- out increases, the relationship between anxiety and positive affect switches from negative to positive.

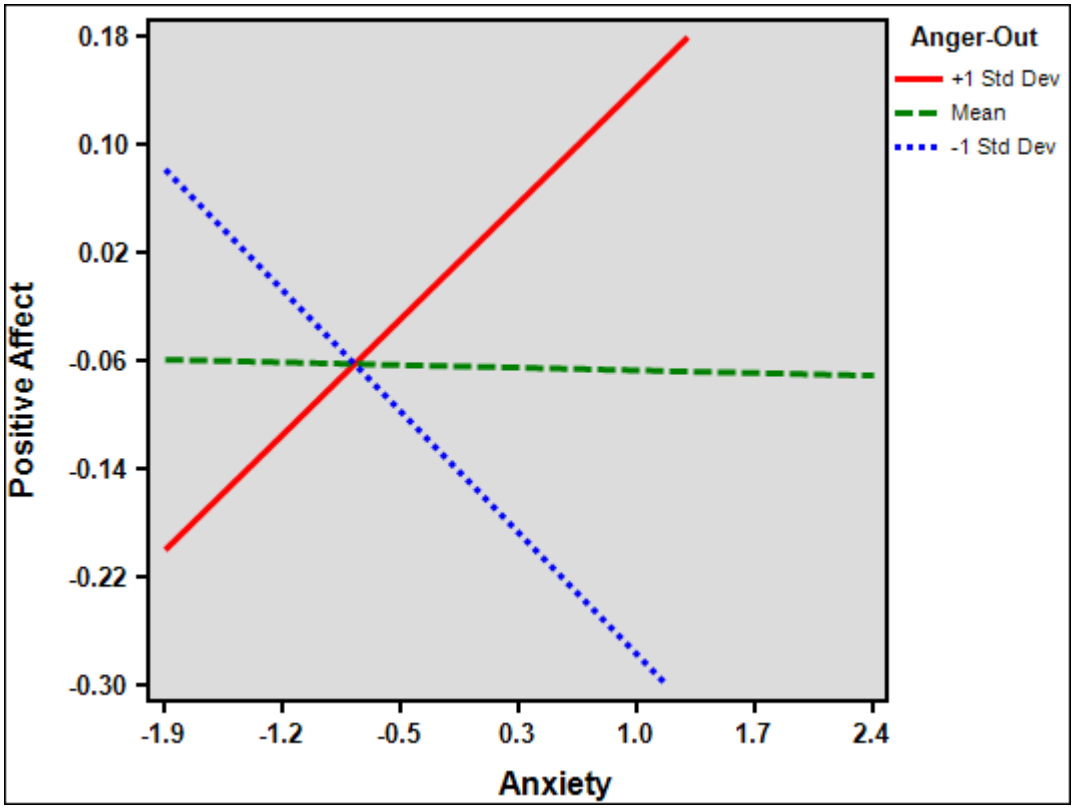

Figure 8: Relationship between Positive Affect and Anxiety at different levels of Anger-Out

Rage

Rage and anxiety had a significant interaction effect (beta = .13, p = .001), this influence is graphed below. This shows that as rage increases, the relationship between anxiety and positive affect switches from negative to positive.

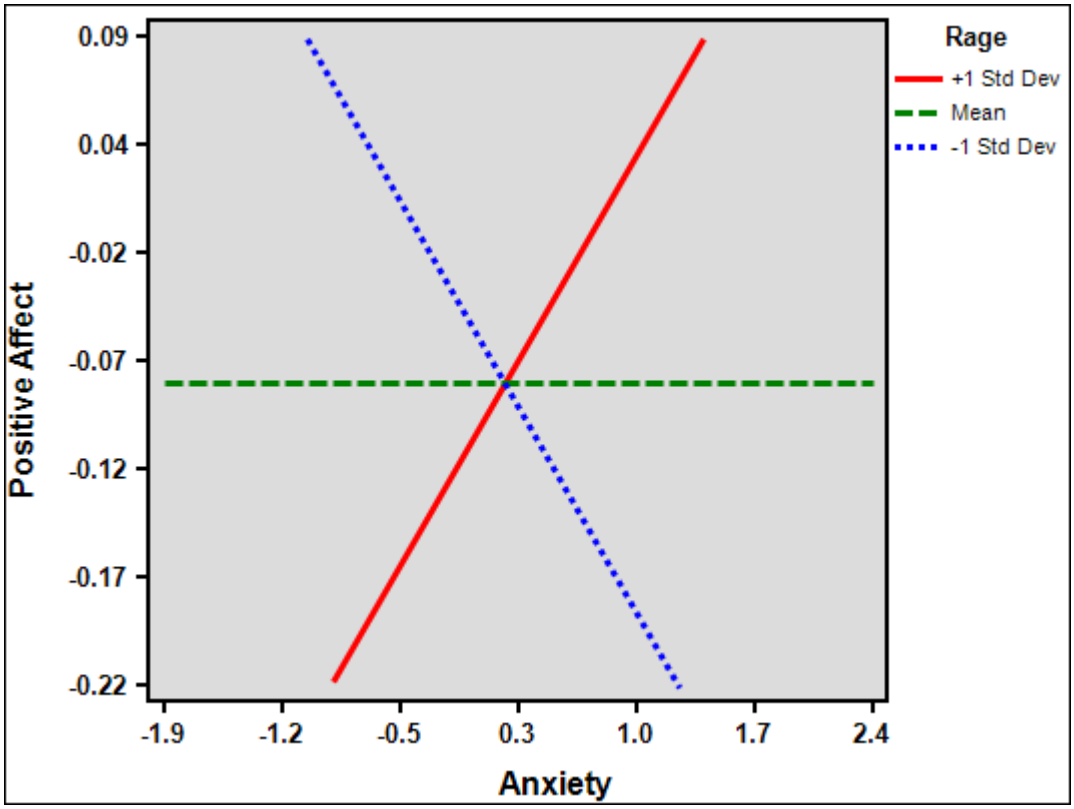

Figure 9: Relationship between Positive Affect and Anxiety at different levels of Rage

Anger and Stress on Positive Affect

Rage

Rage and stress had a significant interaction effect (beta = .13, p = .004), this influence is graphed below. This shows that as rage increases, the relationship between stress and positive affect switches from negative to no relationship.

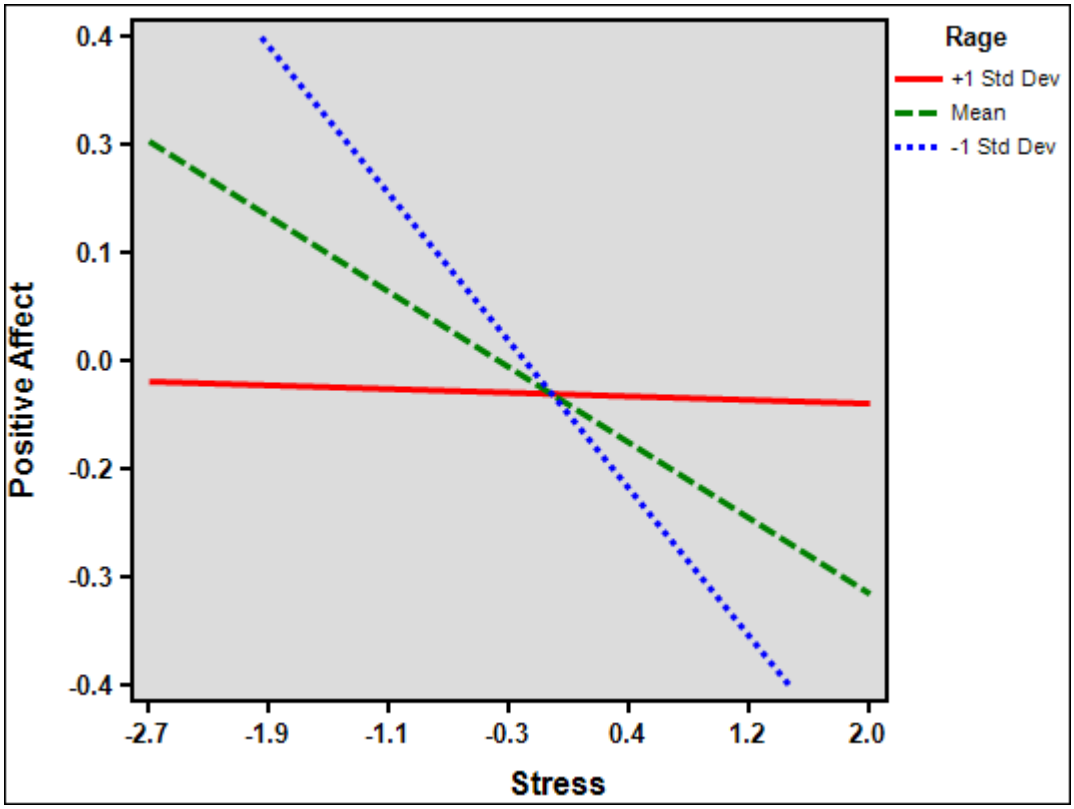

Figure 10: Relationship between Positive Affect and Stress at different levels of Rage

Sleep Quality

The regression model significantly predicted Sleep Quality, F(10, 590) = 13.89, p < .001, adj. R^2 = .18. The regression analysis found that Anxiety (p < .001) and stress (p = .022) had significant effects on Sleep Quality. Low mood/depression and self-harm/suicidal ideation were not significant predictors. Of the anger factors, anger duration (p = .004), anger-out (p = .013), and rage (p = .027) were significant predictors of Sleep Quality.

Table 10: Sleep Quality and Anger

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
		B	Std. Error	Beta			
1	(Constant)	-0.06	0.04		-1.62	0.106	0.00

	Low Mood/Depression	-0.07	0.04	-0.07	-1.71	0.089	0.01
	Anxiety	-0.22	0.04	-0.23	-5.38	0.000	0.05
	Stress	-0.17	0.04	-0.17	-4.19	0.000	0.03
	Self-Harm/Suicidal Ideation	-0.09	0.04	-0.09	-2.16	0.032	0.01
2	(Constant)	-0.05	0.03		-1.53	0.126	0.00
	Low Mood/Depression	-0.04	0.04	-0.04	-1.01	0.315	0.00
	Anxiety	-0.19	0.04	-0.20	-4.71	0.000	0.04
	Stress	-0.10	0.04	-0.10	-2.31	0.022	0.01
	Self-Harm/Suicidal Ideation	-0.08	0.05	-0.08	-1.81	0.070	0.01
	Anger Intensity/Frequency	-0.10	0.07	-0.10	-1.52	0.129	0.00
	Anger-In	-0.07	0.04	-0.07	-1.61	0.108	0.00
	Anger Duration	-0.12	0.04	-0.12	-2.90	0.004	0.01
	Anger Control	-0.01	0.05	-0.01	-0.27	0.789	0.00
	Anger-Out	-0.15	0.06	-0.15	-2.49	0.013	0.01
	Rage	0.13	0.06	0.13	2.22	0.027	0.01

a. Dependent Variable: Sleep Quality

Emotional Stability

The regression model significantly predicted Emotional Stability, $F(10, 590) = 34.43$, $p < .001$, adj. $R^2 = .36$. The regression analysis found that Anxiety ($p < .001$) and stress ($p < .001$) had significant effects on Emotional Stability. Low mood/depression and self-harm/suicidal ideation were not significant predictors. Of the anger factors, anger intensity/frequency ($p < .001$), anger control ($p = .010$), and anger-out ($p = .028$) significantly predicted Emotional Stability.

Table 11: Emotional Stability and Anger

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
		B	Std. Error	Beta			
1	(Constant)	0.00	0.03		0.11	0.915	0.00

	Low Mood/Depression	-0.11	0.04	-0.10	-2.69	0.007	0.01
	Anxiety	-0.20	0.04	-0.20	-5.10	0.000	0.05
	Stress	-0.34	0.04	-0.33	-8.78	0.000	0.15
	Self-Harm/Suicidal Ideation	-0.12	0.04	-0.11	-2.90	0.004	0.02
2	(Constant)	0.01	0.03		0.39	0.698	0.00
	Low Mood/Depression	-0.07	0.04	-0.06	-1.66	0.098	0.00
	Anxiety	-0.15	0.04	-0.15	-4.02	0.000	0.03
	Stress	-0.23	0.04	-0.21	-5.57	0.000	0.05
	Self-Harm/Suicidal Ideation	-0.05	0.04	-0.04	-1.09	0.274	0.00
	Anger Intensity/Frequency	-0.23	0.06	-0.23	-3.93	0.000	0.03
	Anger-In	-0.04	0.04	-0.04	-1.06	0.291	0.00
	Anger Duration	-0.02	0.04	-0.02	-0.45	0.655	0.00
	Anger Control	0.12	0.05	0.12	2.58	0.010	0.01
	Anger-Out	-0.12	0.06	-0.12	-2.20	0.028	0.01
	Rage	0.06	0.06	0.06	1.09	0.276	0.00

a. Dependent Variable: Emotional Stability

Interaction Analysis

Anger and Anxiety on Emotional Stability

Anger intensity/frequency

Anger intensity/frequency and anxiety had a significant interaction effect (beta = .09, p = .011), this influence is graphed below. This shows that as anger intensity/frequency increases, the relationship between anxiety and Emotional Stability becomes less negative.

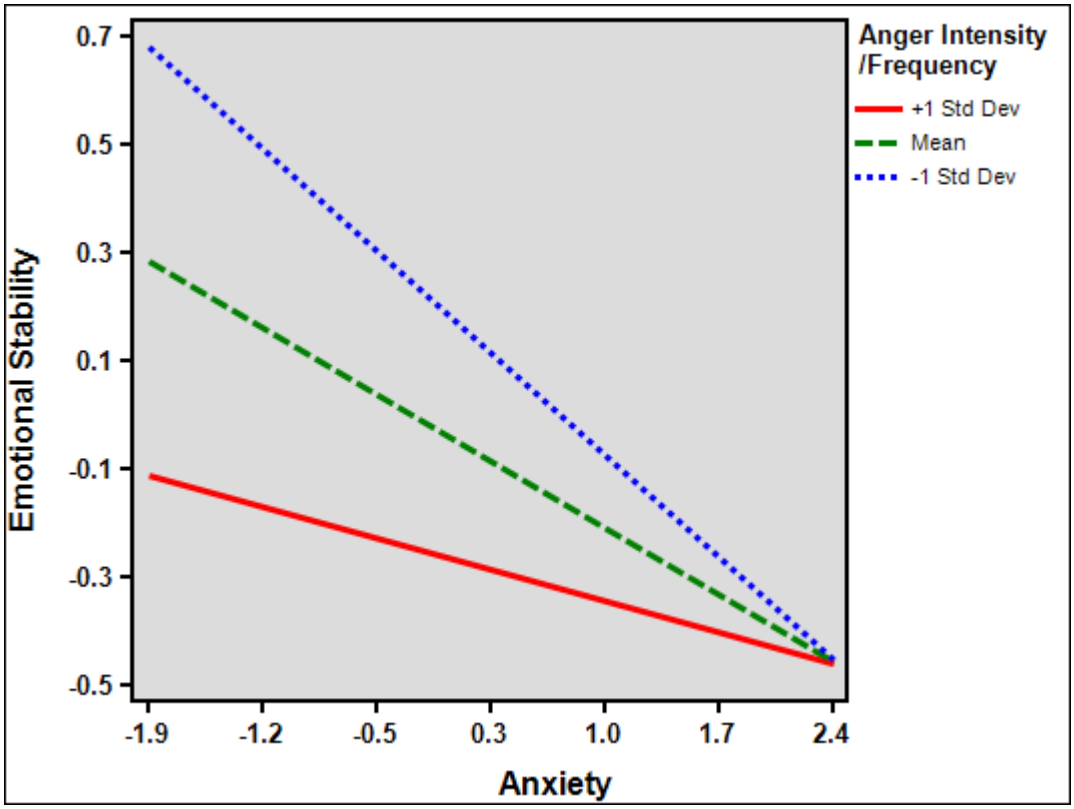

Figure 11: Relationship between Emotional Stability and Anxiety at different levels of Anger Intensity/Frequency

Anger Duration

Anger duration and anxiety had a significant interaction effect (beta = .07, p = .029), this influence is graphed below. This shows that as anger duration increases, the relationship between anxiety and Emotional Stability becomes less negative.

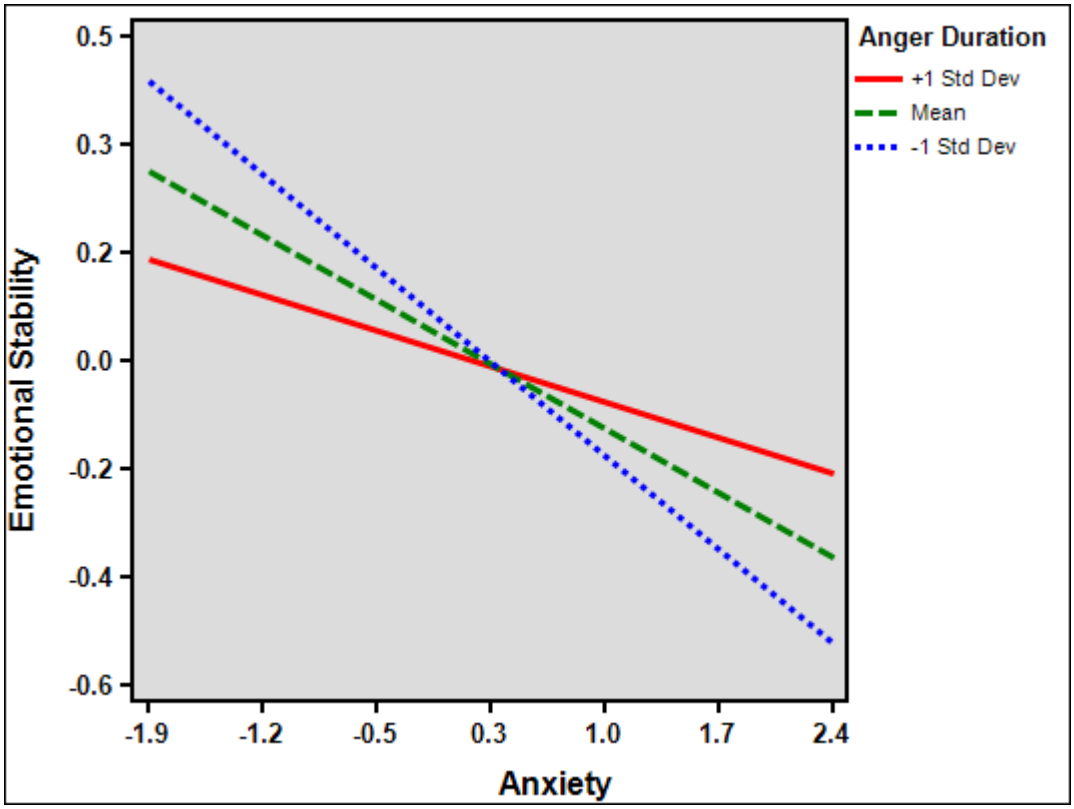

Figure 12: Relationship between Emotional Stability and Anxiety at different levels of Anger Duration

Self-Esteem

The regression model significantly predicted Self-Esteem, F(10, 590) = 14. 351, p < .001, adj. R^2 = .18. The regression analysis found that low mood/depression (p = .003), anxiety (p < .001) stress (p = .007) had significant effects on Self-Esteem. Self-harm/suicidal ideation was not a significant predictor of Self-Esteem. Of the anger factors, anger intensity/frequency (p = .001), anger-in (p = .001), anger control (p = .004), and rage (p = .019) significantly predicted Emotional Self-Esteem.

Table 12: Self-Esteem and Anger

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
	B	Std. Error	Beta			

	(Constant)	0.08	0.04		2.11	0.035	0.00
	Low Mood/Depression	0.09	0.04	0.08	1.97	0.050	0.01
1	Anxiety	-0.24	0.04	-0.25	-5.76	0.000	0.06
	Stress	-0.22	0.04	-0.21	-5.12	0.000	0.05
	Self-Harm/Suicidal Ideation	-0.10	0.04	-0.10	-2.35	0.019	0.01
	(Constant)	0.08	0.04		2.32	0.021	0.00
	Low Mood/Depression	0.13	0.05	0.13	2.97	0.003	0.01
	Anxiety	-0.21	0.04	-0.21	-4.91	0.000	0.04
	Stress	-0.12	0.05	-0.12	-2.72	0.007	0.01
	Self-Harm/Suicidal Ideation	-0.08	0.05	-0.08	-1.81	0.070	0.01
2	Anger Intensity/Frequency	-0.23	0.07	-0.23	-3.46	0.001	0.02
	Anger-In	-0.14	0.04	-0.13	-3.24	0.001	0.02
	Anger Duration	-0.01	0.04	-0.01	-0.21	0.832	0.00
	Anger Control	0.15	0.05	0.15	2.89	0.004	0.01
	Anger-Out	0.04	0.06	0.03	0.56	0.575	0.00
	Rage	0.15	0.06	0.14	2.36	0.019	0.01

a. Dependent Variable: Self-Esteem

Interaction analysis:

No significant interactions were identified between anger factors and depression on Self-Esteem.

Anger and Anxiety on Self-Esteem

Anger Intensity/Frequecy

Anger intensity/frequency and anxiety had a significant interaction effect (beta = .11, p = .008), this influence is graphed below. This shows that as anger intensity/frequency increases, the relationship between anxiety and Self-Esteem becomes weaker.

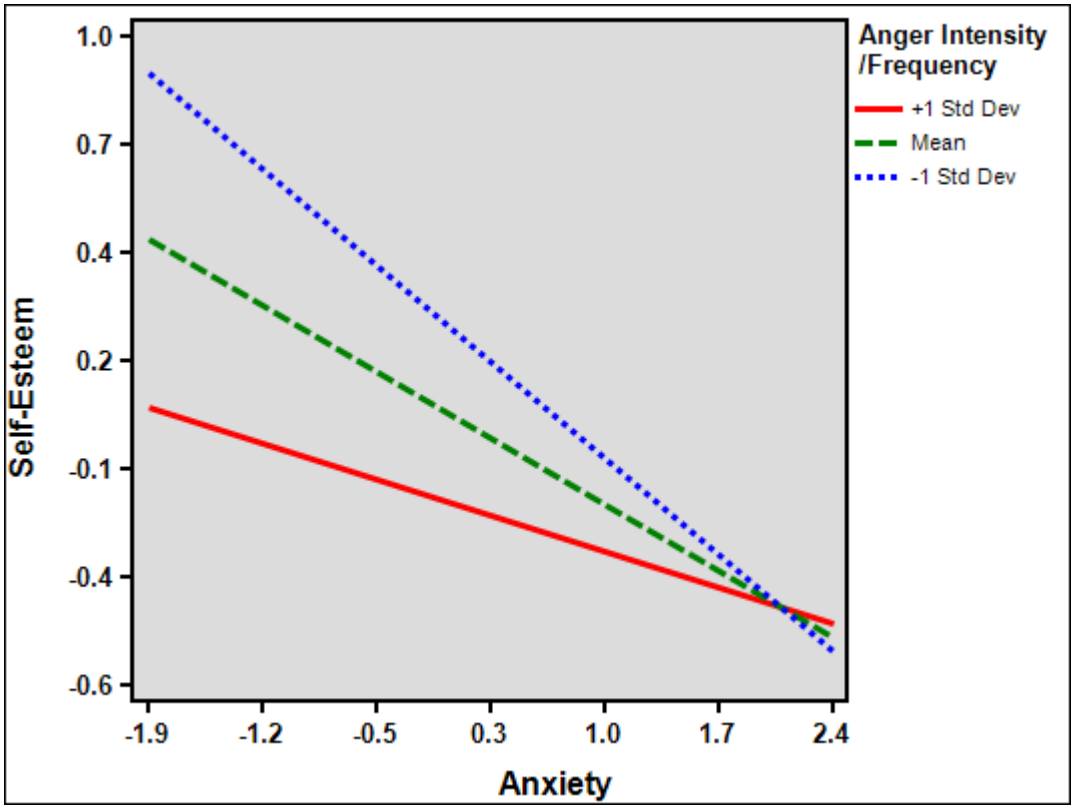

Figure 13: Relationship between Self-Esteem and Anxiety at different levels of Anger Intensity/Frequency

Anger-Out

Anger-out and anxiety had a significant interaction effect (beta = .09, p = .029), this influence is graphed below. This shows that as anger-out increases, the relationship between anxiety and Self-Esteem becomes weaker.

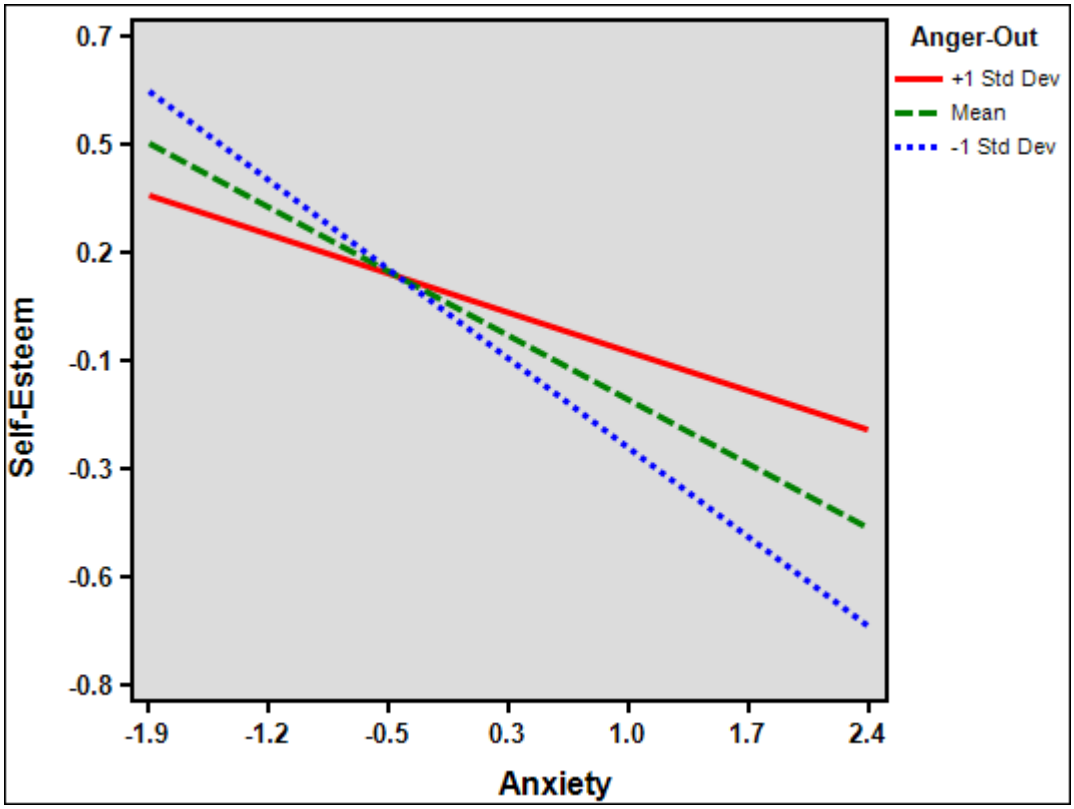

Figure 14: Relationship between Self-Esteem and Anxiety at different levels of Anger-Out

Rage

Rage and anxiety had a significant interaction effect (beta = .12, p = .005), this influence is graphed below. This shows that as rage increases, the relationship between anxiety and Self-Esteem becomes weaker.

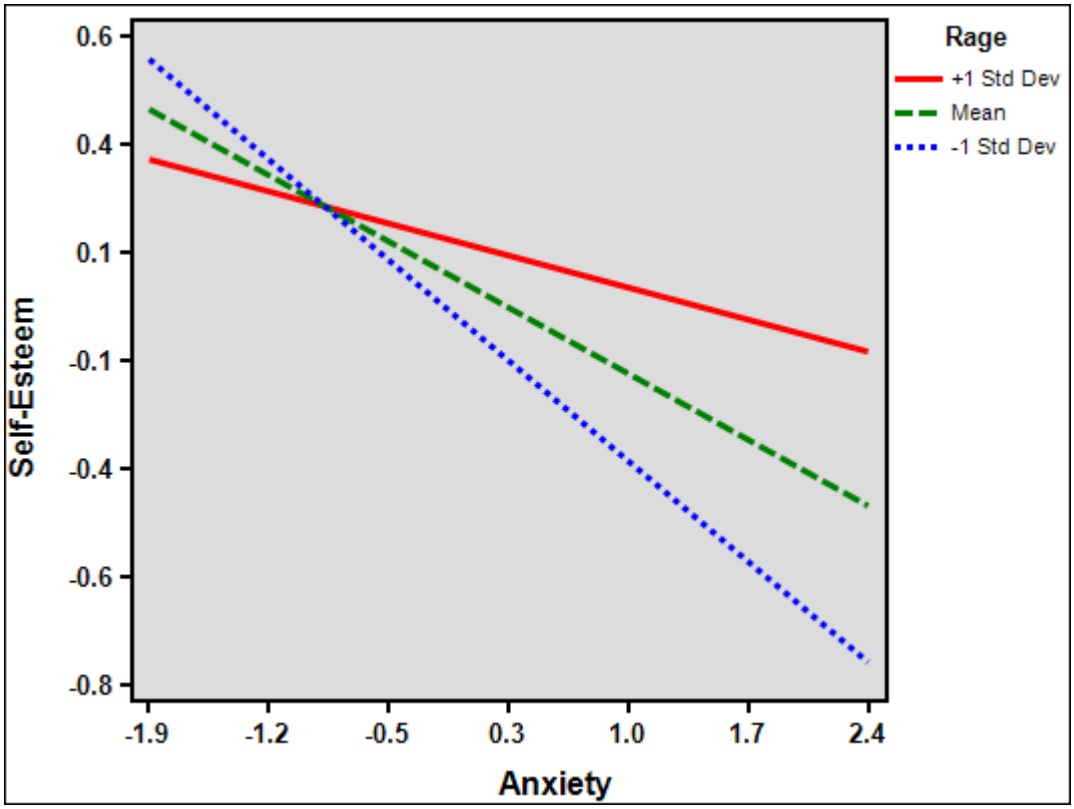

Figure 15: Relationship between Self-Esteem and Anxiety at different levels of Rage

Anger and Stress on Self-Esteem

Anger Intensity/Frequency

Anger intensity/frequency and stress had a significant interaction effect (beta = .10, p = .018), this influence is graphed below. This shows that as anger intensity/frequency increases, the relationship between stress and Self-Esteem becomes weaker.

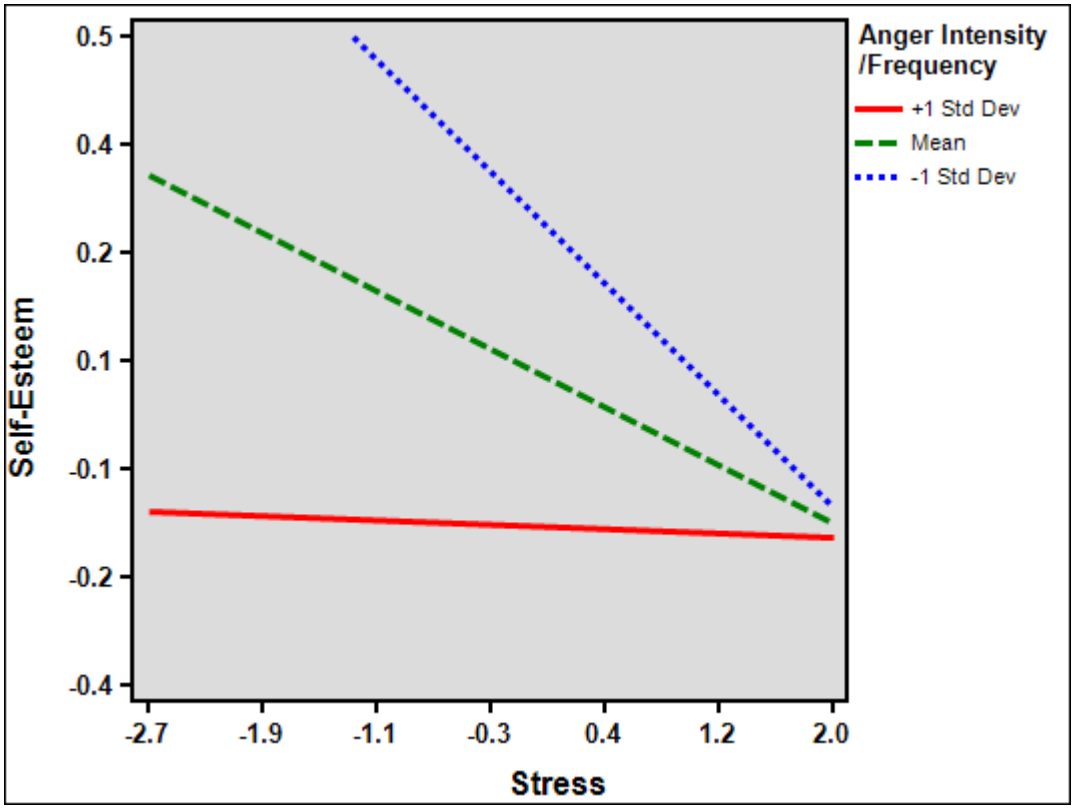

Figure 16: Relationship between Self-Esteem and Stress at different levels of Anger Intensity/Frequency

Rage

Rage and stress had a significant interaction effect (beta = .16, p = .001), this influence is graphed below. This shows that as rage increases, the relationship between stress and Self-Esteem changes from strongly negative to weakly positive.

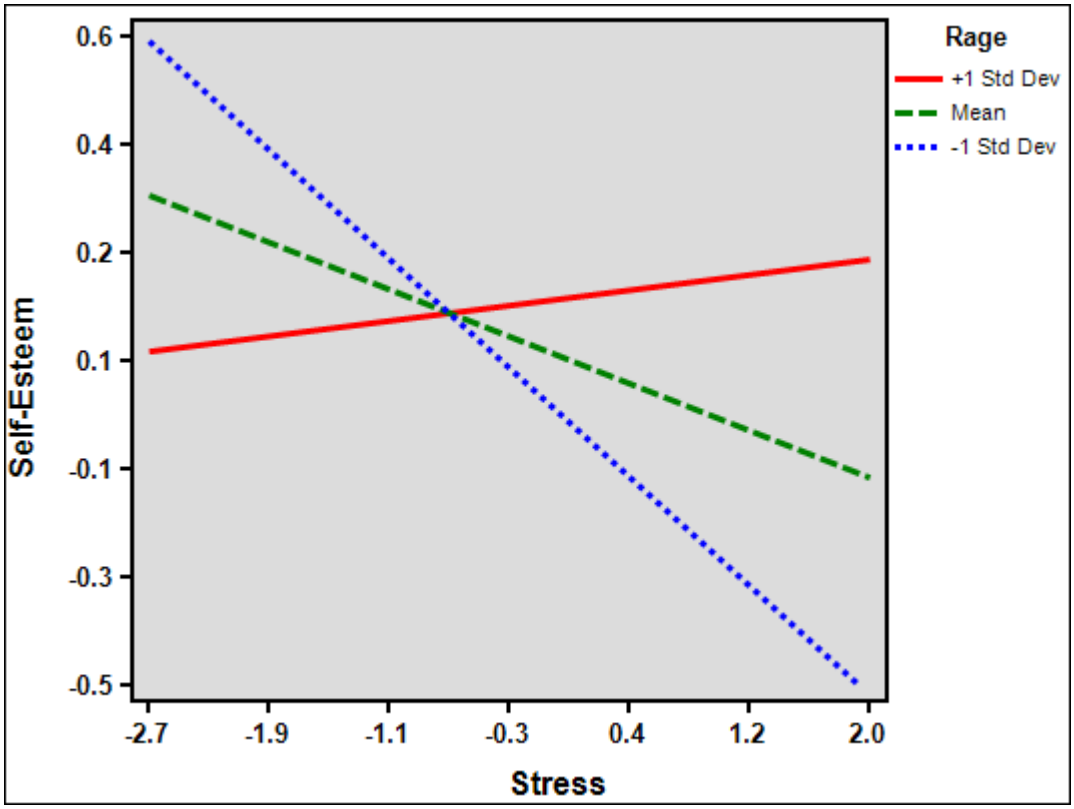

Figure 17: Relationship between Self-Esteem and Stress at different levels of Rage

Worry

The regression model significantly predicted Worry, $F(10, 590) = 18.03$, $p < .001$, adj. $R^2 = .22$. The regression analysis found that anxiety ($p < .001$) and stress ($p < .001$) had significant effects on Worry. Low mood/depression and self-harm/suicidal ideation were not a significant predictors of Worry. Of the anger factors, anger intensity/frequency ($p < .001$) and rage ($p = .006$) significantly predicted Worry.

Table 13: Worry and Anger

Coefficients[a]

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	Cohen's f^2

		B	Std. Error	Beta			
	(Constant)	-0.05	0.03		-1.59	0.113	0.00
	Low Mood/Depression	-0.04	0.04	-0.04	-0.88	0.381	0.00
1	Anxiety	0.27	0.04	0.28	6.80	0.000	0.08
	Stress	0.30	0.04	0.30	7.59	0.000	0.010
	Self-Harm/Suicidal Ideation	-0.03	0.04	-0.03	-0.64	0.520	0.00
	(Constant)	-0.06	0.03		-1.76	0.079	0.00
	Low Mood/Depression	-0.08	0.04	-0.07	-1.80	0.072	0.01
	Anxiety	0.24	0.04	0.25	5.94	0.000	0.06
	Stress	0.21	0.04	0.21	4.90	0.000	0.04
	Self-Harm/Suicidal Ideation	-0.04	0.04	-0.04	-0.81	0.418	0.00
2	Anger Intensity/Frequency	0.25	0.06	0.25	3.94	0.000	0.03
	Anger-In	0.05	0.04	0.05	1.21	0.226	0.00
	Anger Duration	-0.01	0.04	-0.01	-0.17	0.864	0.00
	Anger Control	-0.04	0.05	-0.04	-0.87	0.383	0.00
	Anger-Out	0.04	0.06	0.04	0.64	0.525	0.00
	Rage	-0.16	0.06	-0.16	-2.77	0.006	0.01

a. Dependent Variable: Worry

Interaction analysis:

Anger and Anxiety on Worry

Anger intensity/frequency

Anger intensity/frequency and anxiety had a significant interaction effect (beta = -.09, p = .015), this influence is graphed below. This shows that as anger intensity/frequency

increases, the relationship between anxiety and Worry becomes weaker.

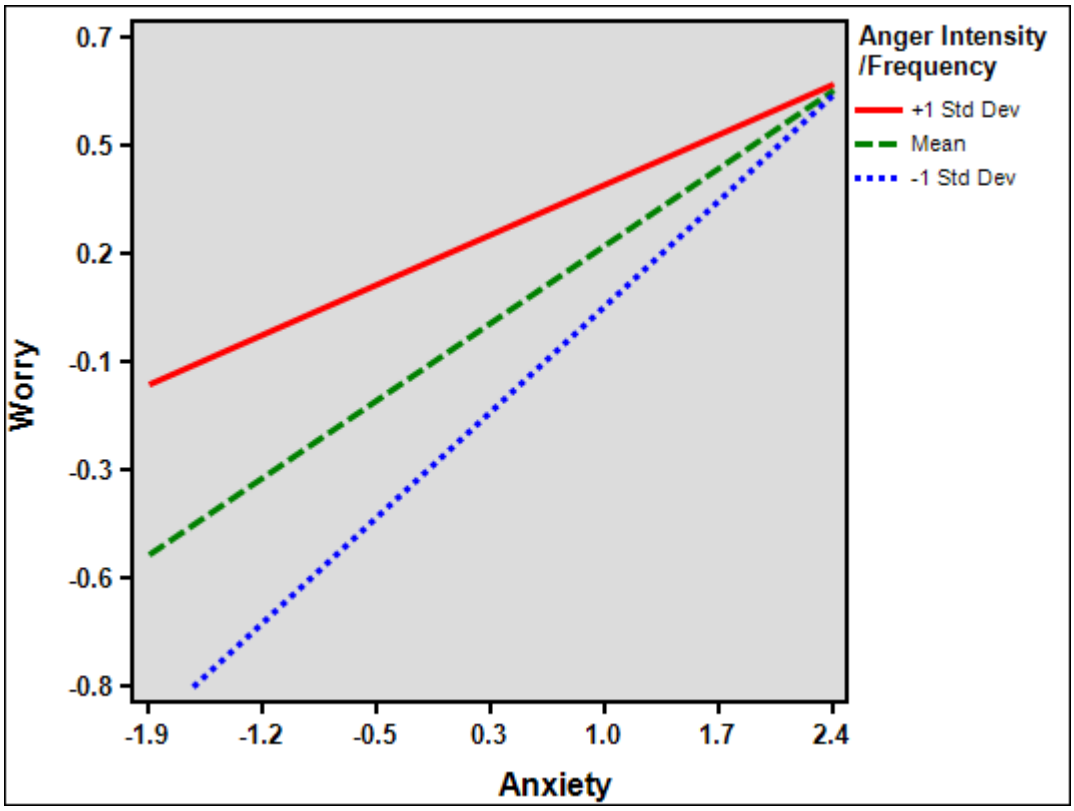

Figure 18: Relationship between Worry and Anxiety at different levels of Anger Intensity/Frequency

Anger and Stress on Worry

Anger intensity/frequency

Anger intensity/frequency and stress had a significant interaction effect (beta = -.15, p < .001), this influence is graphed below. This shows that as anger intensity/frequency increases, the relationship between stress and Worry becomes weaker and less negative.

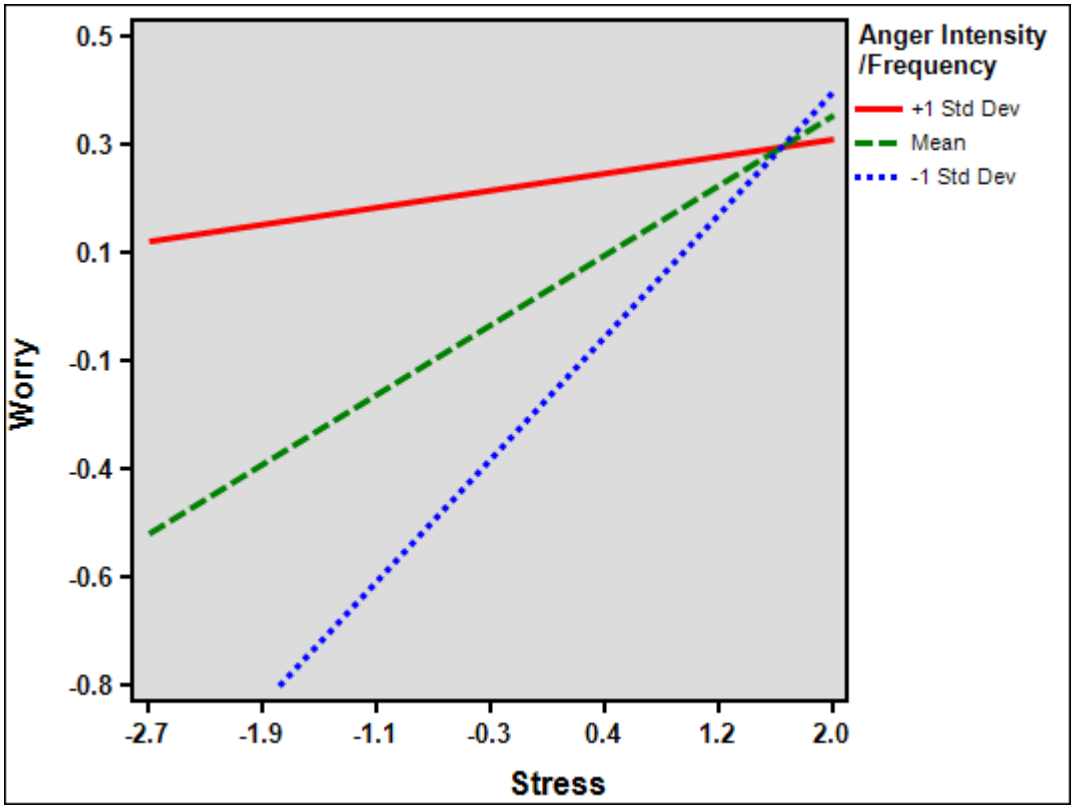

Figure 19: Relationship between Worry and Stress at different levels of Anger Intensity/Frequency

Anger Control

Anger control and stress had a significant interaction effect (beta = .09, p = .023), this influence is graphed below. This shows that as anger control increases, the relationship between stress and Worry becomes more positive.

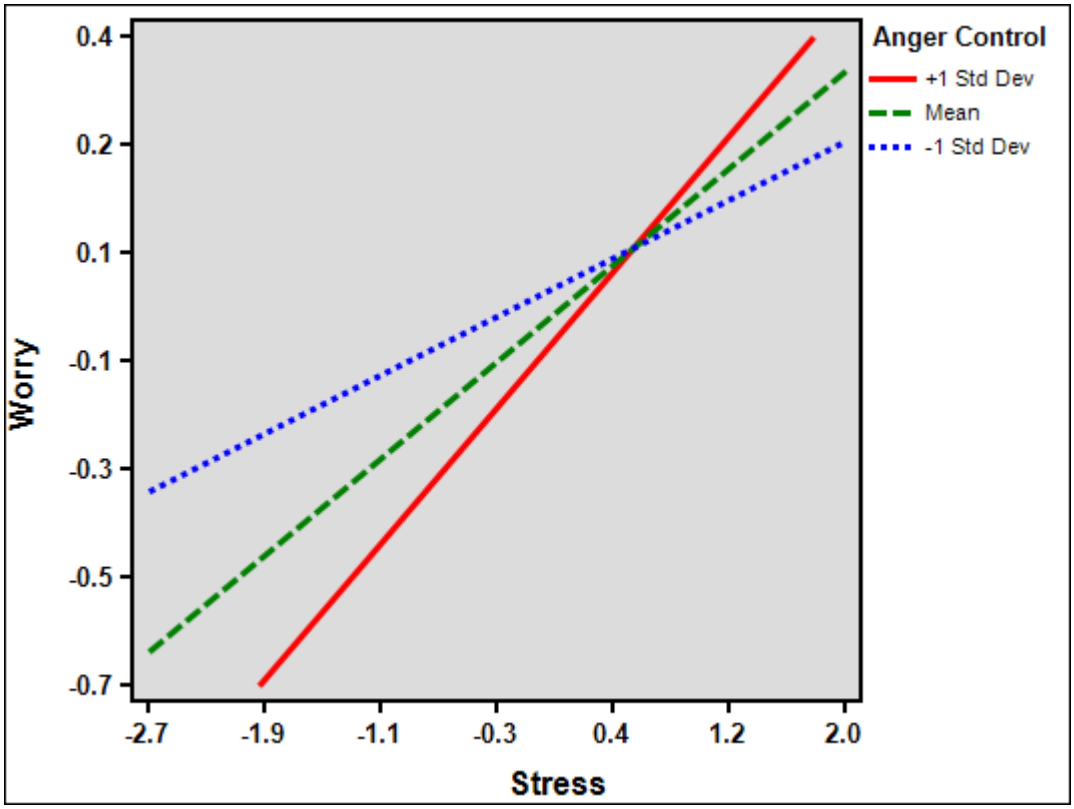

Figure 20: Relationship between Worry and Stress at different levels of Anger Control

Anger-Out

Anger-out and stress had a significant interaction effect (beta = -.14, p = .001), this influence is graphed below. This shows that as anger-out increases, the relationship between stress and Worry becomes less positive.

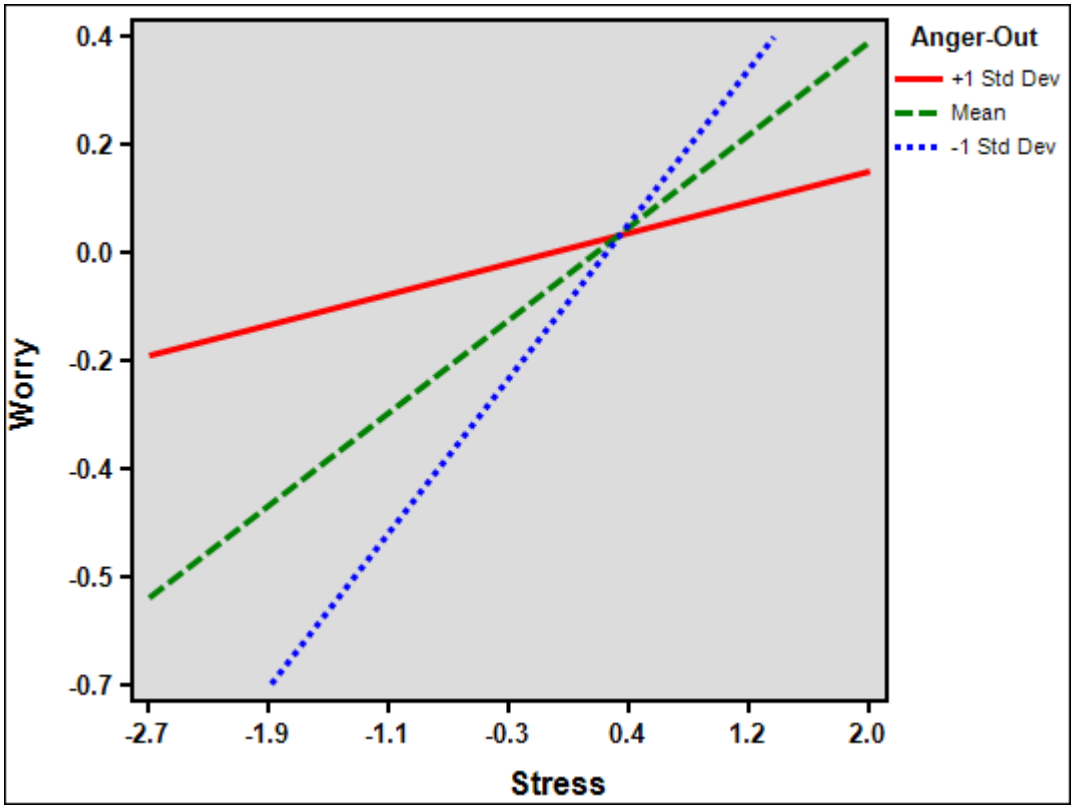

Figure 21: Relationship between Worry and Stress at different levels of Anger-Out

Rage

Rage and stress had a significant interaction effect (beta = -.16, p = .001), this influence is graphed below. This shows that as rage increases, the relationship between stress and Worry becomes less positive.

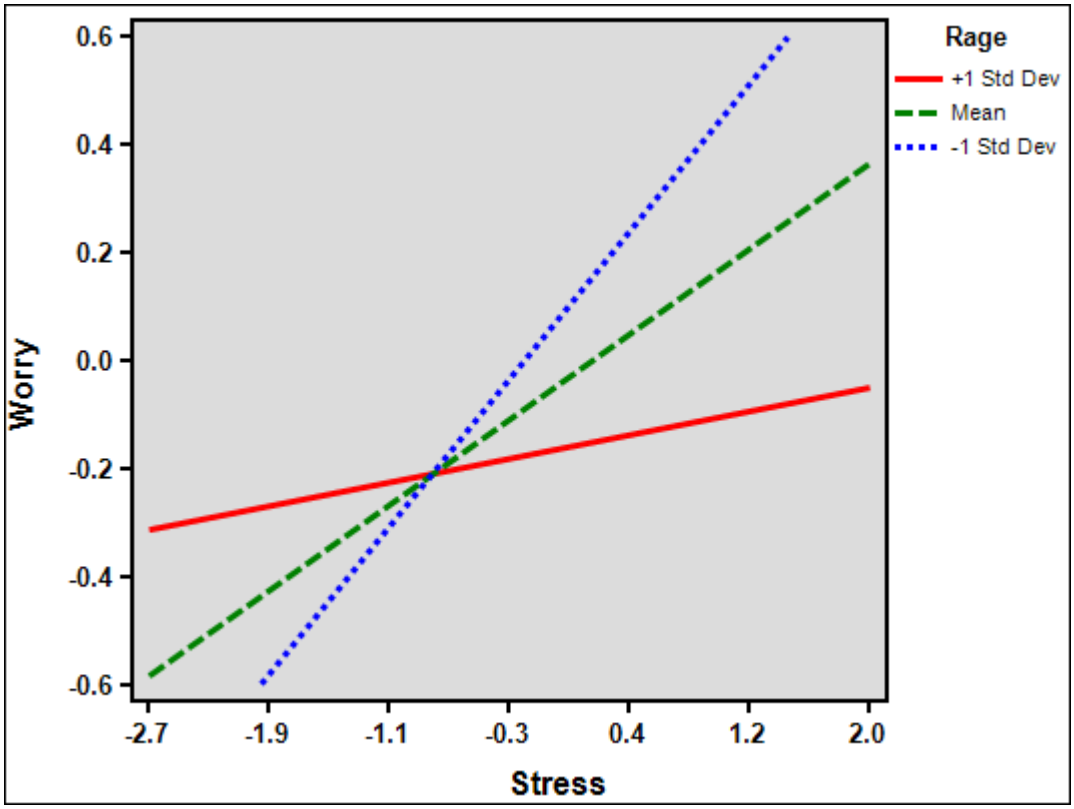

Figure 22: Relationship between Worry and Stress at different levels of Rage

Resilience (General)

Resilience (General) is characterised by coping well with setbacks and challenges in general. The regression model significantly predicted Resilience (General), $F(10, 590) = 15.10$, $p < .001$, adj. $R^2 = .19$. The regression analysis found that low mood/depression ($p = .015$) and anxiety ($p = .001$) had significant effects on Resilience (General). Stress and self-harm/suicidal ideation were not a significant predictors of Resilience (General). Of the anger factors, anger intensity/frequency ($p = .001$), anger-in ($p = .003$), anger duration ($p < .001$), and anger control ($p < .001$) significantly predicted Resilience (General).

Table 14: Resilience (General) and Anger

Coefficients[a]

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	Cohen's f^2

		B	Std. Error	Beta			
1	(Constant)	0.05	0.04		1.36	0.175	0.00
	Low Mood/Depression	-0.09	0.04	-0.09	-2.09	0.037	0.01
	Anxiety	-0.12	0.04	-0.13	-2.96	0.003	0.02
	Stress	-0.06	0.04	-0.05	-1.30	0.193	0.00
	Self-Harm/Suicidal Ideation	-0.13	0.04	-0.14	-3.08	0.002	0.02
2	(Constant)	0.05	0.03		1.48	0.139	0.00
	Low Mood/Depression	-0.11	0.04	-0.10	-2.44	0.015	0.01
	Anxiety	-0.13	0.04	-0.14	-3.21	0.001	0.02
	Stress	-0.07	0.04	-0.07	-1.57	0.117	0.00
	Self-Harm/Suicidal Ideation	-0.08	0.04	-0.08	-1.87	0.062	0.01
	Anger Intensity/Frequency	0.22	0.06	0.23	3.49	0.001	0.02
	Anger-In	-0.12	0.04	-0.12	-3.03	0.003	0.02
	Anger Duration	-0.16	0.04	-0.16	-3.79	0.000	0.02
	Anger Control	0.28	0.05	0.29	5.61	0.000	0.05
	Anger-Out	-0.02	0.06	-0.02	-0.33	0.740	0.00
	Rage	-0.09	0.06	-0.09	-1.47	0.142	0.00

a. Dependent Variable: Resilience (General)

Resilience (Mental Health)

Resilience (Mental Health) is characterised by having effective strategies for dealing specifically with feelings of depression, anxiety, and stress. The regression model significantly predicted Resilience (Mental Health), $F(10, 590) = 17.74$, $p < .001$, adj. $R^2 = .22$. The regression analysis found that low mood/depression ($p = .002$), stress ($p = .002$) and self-harm/suicidal ideation ($p = .010$) had significant effects on Resilience (Mental Health). Anxiety was not a significant predictor of Resilience (Mental Health). Of the anger factors, anger intensity/frequency ($p = .006$), anger-in ($p = .004$), and anger control ($p < .001$) significantly predicted Resilience (Mental Health).

Table 15: Resilience (Mental Health) and Anger

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
		B	Std. Error	Beta			
1	(Constant)	0.06	0.04		1.52	0.130	0.00
	Low Mood/Depression	-0.19	0.05	-0.17	-4.13	0.000	0.03
	Anxiety	-0.02	0.04	-0.02	-0.48	0.631	0.00
	Stress	-0.23	0.04	-0.22	-5.42	0.000	0.05
	Self-Harm/Suicidal Ideation	-0.16	0.05	-0.15	-3.56	0.000	0.02
2	(Constant)	0.06	0.04		1.76	0.079	0.00
	Low Mood/Depression	-0.14	0.05	-0.13	-3.15	0.002	0.02
	Anxiety	0.01	0.04	0.01	0.29	0.771	0.00
	Stress	-0.14	0.05	-0.13	-3.06	0.002	0.02
	Self-Harm/Suicidal Ideation	-0.12	0.05	-0.11	-2.60	0.010	0.01
	Anger Intensity/Frequency	-0.18	0.07	-0.18	-2.77	0.006	0.01
	Anger-In	-0.12	0.04	-0.12	-2.93	0.004	0.01
	Anger Duration	-0.07	0.04	-0.07	-1.68	0.094	0.00
	Anger Control	0.26	0.05	0.26	5.04	0.000	0.04
	Anger-Out	0.04	0.06	0.04	0.66	0.510	0.00
	Rage	0.12	0.06	0.11	1.93	0.054	0.01

a. Dependent Variable: Resilience (Mental Health)

Social Support

The regression model significantly predicted Social Support, $F(10, 590) = 10.10$, $p < .001$, adj. $R^2 = .15$. The regression analysis found that low mood/depression ($p = .001$) and self-harm/suicidal ideation ($p = .001$) had significant effects on Social Support. Anxiety and stress were not significant predictors of Social Support. Of the anger factors, only rage ($p = .011$) significantly predicted Social Support.

Table 16: Social Support and Anger

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
		B	Std. Error	Beta			
1	(Constant)	-0.01	0.04		-0.22	0.825	0.00
	Low Mood/Depression	-0.18	0.04	-0.17	-4.03	0.000	0.03
	Anxiety	0.01	0.04	0.01	0.18	0.854	0.00
	Stress	-0.06	0.04	-0.06	-1.44	0.149	0.00
	Self-Harm/Suicidal Ideation	-0.22	0.04	-0.22	-5.02	0.000	0.04
2	(Constant)	0.00	0.04		-0.10	0.920	0.00
	Low Mood/Depression	-0.15	0.05	-0.14	-3.27	0.001	0.02
	Anxiety	0.03	0.04	0.03	0.63	0.528	0.00
	Stress	-0.02	0.05	-0.02	-0.50	0.615	0.00
	Self-Harm/Suicidal Ideation	-0.16	0.05	-0.16	-3.39	0.001	0.02
	Anger Intensity/Frequency	-0.06	0.07	-0.06	-0.95	0.345	0.00
	Anger-In	0.02	0.04	0.02	0.45	0.652	0.00
	Anger Duration	-0.08	0.04	-0.08	-1.75	0.080	0.01
	Anger Control	0.01	0.05	0.01	0.20	0.843	0.00
	Anger-Out	0.06	0.06	0.06	0.91	0.364	0.00
	Rage	-0.16	0.06	-0.15	-2.54	0.011	0.01

a. Dependent Variable: Social Support

Interaction Analysis

Anger and Low mood/Depression on Social Support

Anger Duration

Anger duration and depression had a significant interaction effect (beta = -.10, p = .017), this influence is graphed below. This shows that as anger duration increases, the relationship between depression and Social Support becomes more strongly negative.

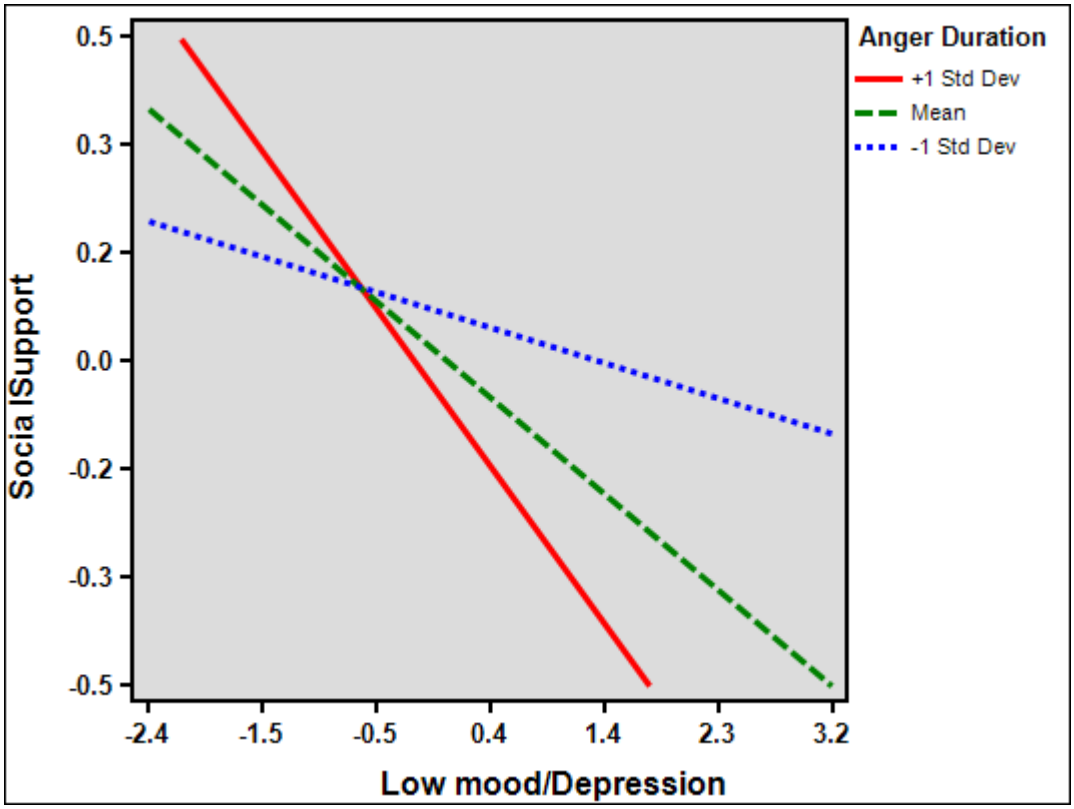

Figure 23: Relationship between Social Support and Low mood/Depression at different levels of Anger Duration

Rage

Rage and depression had a significant interaction effect (beta = .10, p = .036), this influence is graphed below. This shows that as rage increases, the relationship between depression and Social Support becomes less negative.

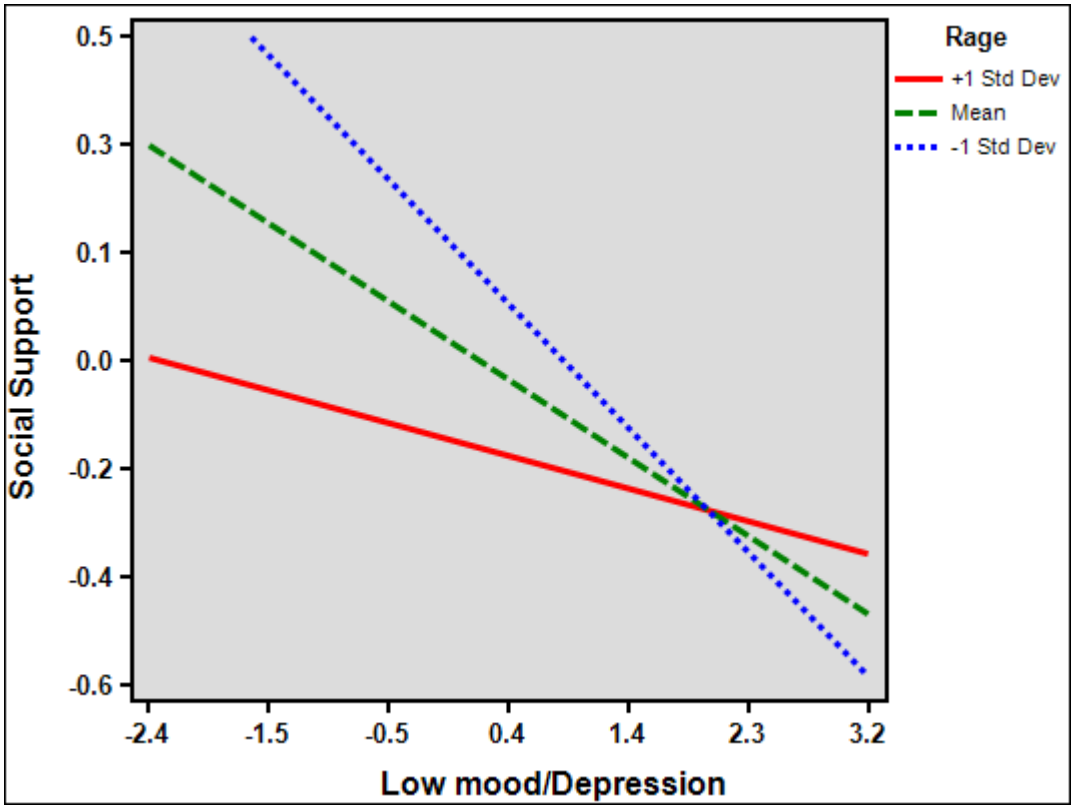

Figure 24: Relationship between Social Support and Low mood/Depression at different levels of Rage

Anger and Anxiety on Social Support

Anger-In

Anger-in and anxiety had a significant interaction effect (beta = .09, p = .013), this influence is graphed below. This shows that as anger-in increases, the relationship between anxiety and Social Support switches from negative to positive.

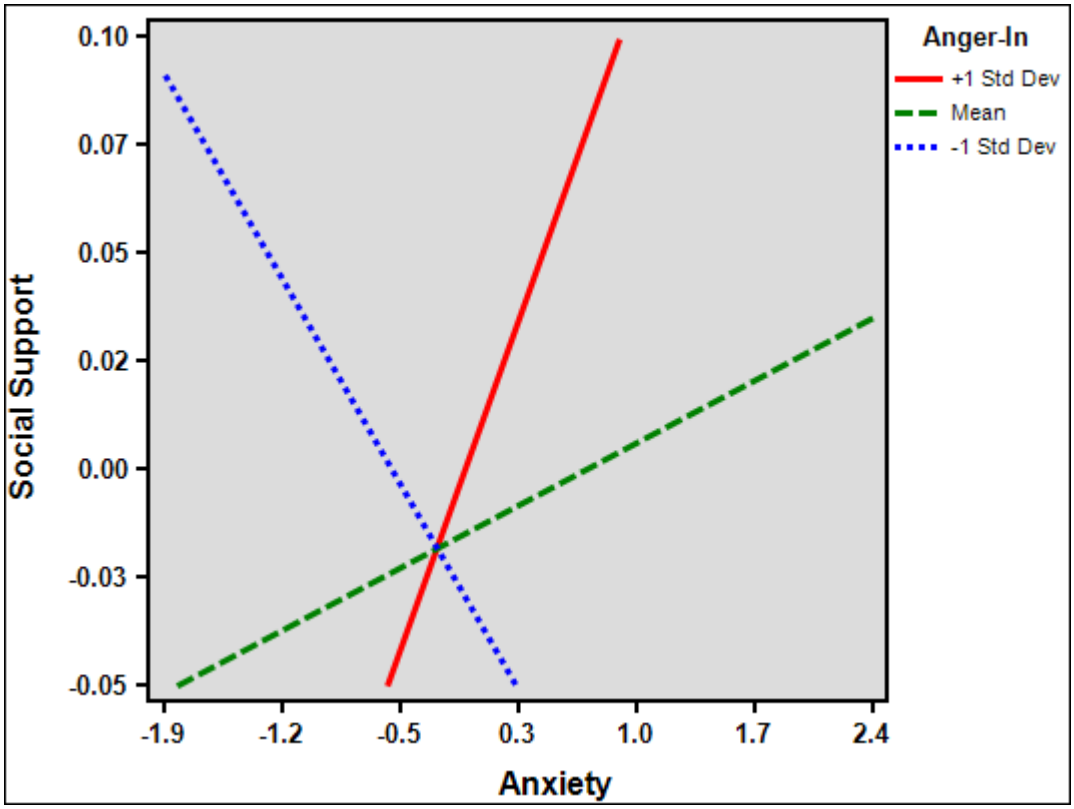

Figure 25: Relationship between Social Support and Anxiety at different levels of Anger-In

Anger-Out

Anger-out and anxiety had a significant interaction effect (beta = .09, p = .017), this influence is graphed below. This shows that as anger-out increases, the relationship between anxiety and Social Support switches from negative to positive.

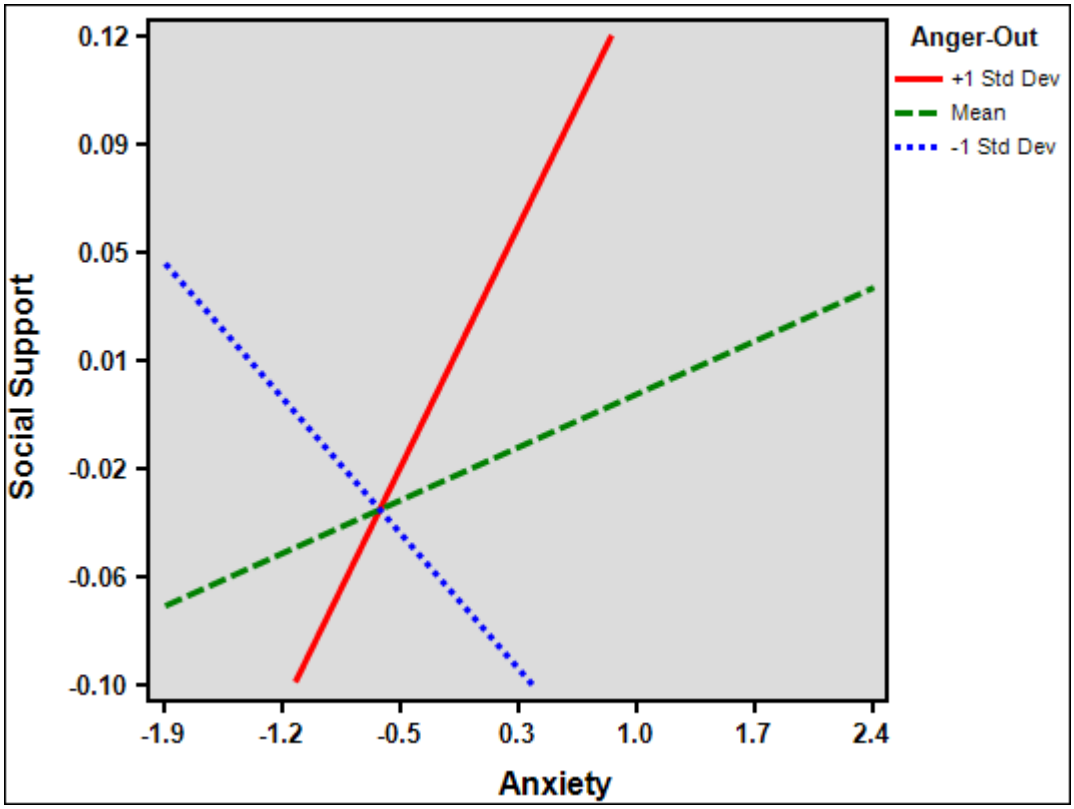

Figure 26: Relationship between Social Support and Anxiety at different levels of Anger-Out

Social Life Quality

The regression model significantly predicted Social Life Quality, F(10, 590) = 11.63, p < .001, adj. R^2 = .15. The regression analysis found that low mood/depression (p = .026) and anxiety (p < .001) had significant effects on Social Life Quality. Stress and self-harm/suicidal ideation were not significant predictors of Social Life Quality. Of the anger factors, anger intensity/frequency (p < .001), anger duration (p = .041), and anger-out (p = .048) significantly predicted Social Life Quality.

Table 17: Social Life Quality and Anger

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
	B	Std. Error	Beta			

	(Constant)	-0.05	0.04		-1.34	0.180	0.00
	Low Mood/Depression	-0.16	0.05	-0.15	-3.59	0.000	0.02
1	Anxiety	-0.22	0.04	-0.22	-5.12	0.000	0.05
	Stress	-0.03	0.04	-0.03	-0.67	0.502	0.00
	Self-Harm/Suicidal Ideation	-0.06	0.05	-0.06	-1.28	0.202	0.00
	(Constant)	-0.04	0.04		-1.20	0.230	0.00
	Low Mood/Depression	-0.10	0.05	-0.10	-2.23	0.026	0.01
	Anxiety	-0.19	0.04	-0.19	-4.42	0.000	0.03
	Stress	0.06	0.05	0.06	1.27	0.204	0.00
	Self-Harm/Suicidal Ideation	-0.02	0.05	-0.02	-0.34	0.738	0.00
2	Anger Intensity/Frequency	-0.26	0.07	-0.26	-3.82	0.000	0.02
	Anger-In	0.03	0.04	0.03	0.72	0.470	0.00
	Anger Duration	-0.09	0.05	-0.09	-2.05	0.041	0.01
	Anger Control	0.04	0.05	0.04	0.77	0.442	0.00
	Anger-Out	0.13	0.06	0.12	1.98	0.048	0.01
	Rage	-0.01	0.06	-0.01	-0.20	0.843	0.00

a. Dependent Variable: Social Life Quality

Interaction Analysis

Anger and Depression on Social Life

Anger-In

Anger-in and depression had a significant interaction effect (beta = -.09, p = .036), this influence is graphed below. This shows that as anger-in increases, the relationship between depression and Social Life becomes increasingly negative.

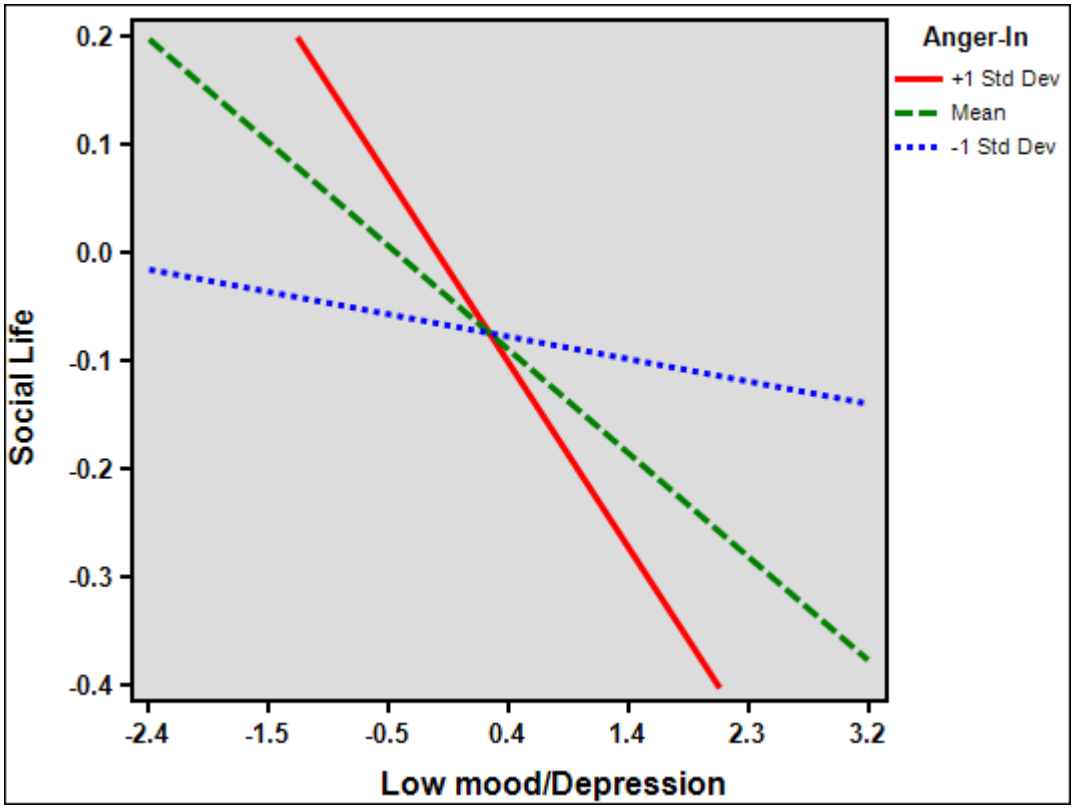

Figure 27: Relationship between Social Life Quality and Low mood/Depression at different levels of Anger-In

Anger and Anxiety on Social Life

Anger-Out

Anger-out and anxiety had a significant interaction effect (beta = .10, p = .013), this influence is graphed below. This shows that as anger-out increases, the relationship between anxiety and Social Life becomes less negative.

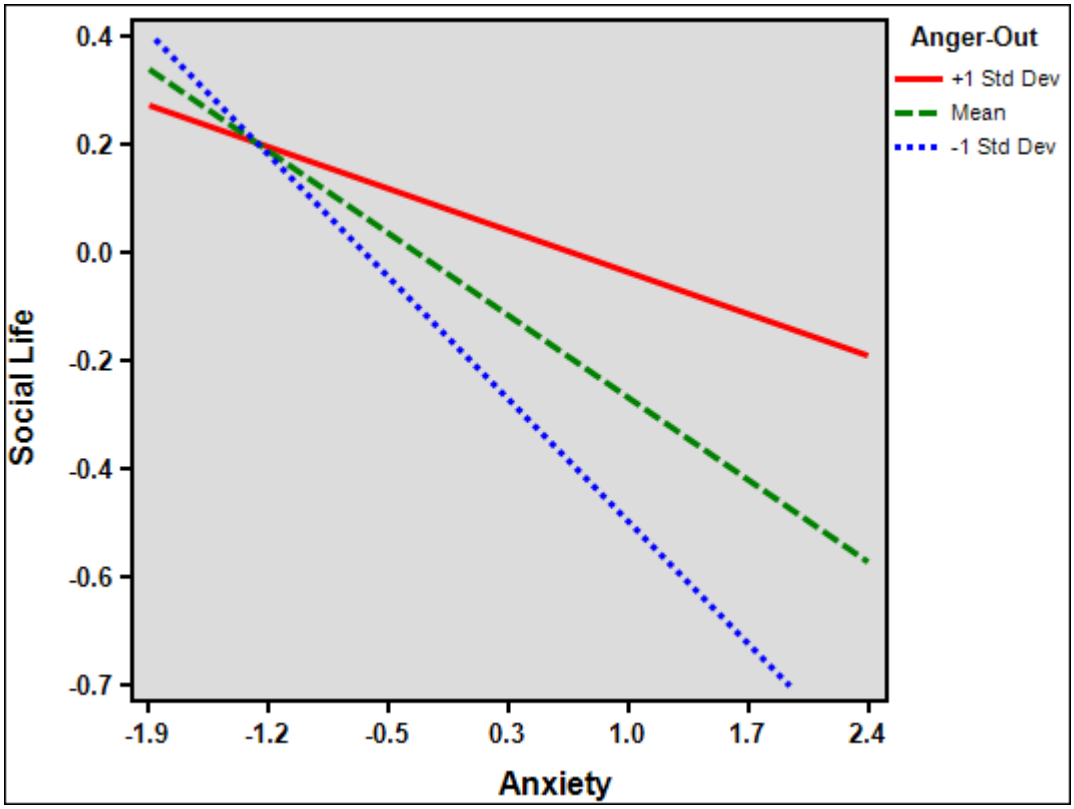

Figure 28: Relationship between Social Life Quality and Anxiety at different levels of Anger-Out

Fatigue

The regression model significantly predicted Fatigue, $F(10, 590) = 24.52$, $p < .001$, adj. $R^2 = .28$. The regression analysis found that anxiety ($p < .001$) and stress ($p < .001$) had significant effects on Fatigue. Low mood/depression and self-harm/suicidal ideation were not significant predictors of Fatigue. Of the anger factors, anger intensity/frequency ($p < .001$) and rage ($p < .001$) significantly predicted Fatigue.

Table 18: Fatigue and Anger

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
		B	Std. Error	Beta			
1	(Constant)	0.05	0.04		1.33	0.183	0.00
	Low Mood/Depression	0.03	0.04	0.02	0.59	0.558	0.00
	Anxiety	0.25	0.04	0.25	6.04	0.000	0.07

	Stress	0.34	0.04	0.32	8.36	0.000	0.13
	Self-Harm/Suicidal Ideation	0.06	0.04	0.06	1.36	0.175	0.00
2	(Constant)	0.04	0.03		1.18	0.241	0.00
	Low Mood/Depression	-0.04	0.04	-0.04	-0.90	0.369	0.00
	Anxiety	0.20	0.04	0.20	4.95	0.000	0.04
	Stress	0.22	0.04	0.20	4.88	0.000	0.04
	Self-Harm/Suicidal Ideation	0.05	0.04	0.05	1.13	0.258	0.00
	Anger Intensity/Frequency	0.36	0.06	0.35	5.56	0.000	0.05
	Anger-In	0.03	0.04	0.03	0.72	0.469	0.00
	Anger Duration	0.06	0.04	0.05	1.33	0.184	0.00
	Anger Control	0.05	0.05	0.05	1.05	0.296	0.00
	Anger-Out	0.08	0.06	0.08	1.36	0.174	0.00
	Rage	-0.21	0.06	-0.20	-3.56	0.000	0.02

a. Dependent Variable: Fatigue

Motivation

The regression model significantly predicted Motivation, $F(10, 590) = 4.45$, $p < .001$, adj. $R^2 = .05$. The regression analysis found that none of the variables were significant predictors in the full model when including the six anger components. However, both stress ($p = .002$) and self-harm/suicidal ideation ($p = .022$) both significantly predicted lower motivation in the model where anger components were excluded.

Table 19: Motivation and Anger

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
		B	Std. Error	Beta			
1	(Constant)	-0.06	0.04		-1.50	0.134	0.00
	Low Mood/Depression	0.01	0.05	0.01	0.30	0.766	0.00
	Anxiety	-0.07	0.04	-0.07	-1.65	0.100	0.00
	Stress	-0.14	0.04	-0.13	-3.12	0.002	0.02
	Self-Harm/Suicidal Ideation	-0.11	0.05	-0.10	-2.29	0.022	0.01
2	(Constant)	-0.05	0.04		-1.42	0.156	0.00

Low Mood/Depression	0.04	0.05	0.03	0.76	0.448	0.00
Anxiety	-0.05	0.04	-0.05	-1.14	0.256	0.00
Stress	-0.08	0.05	-0.08	-1.65	0.099	0.00
Self-Harm/Suicidal Ideation	-0.09	0.05	-0.09	-1.93	0.054	0.01
Anger Intensity/Frequency	-0.10	0.07	-0.10	-1.34	0.180	0.00
Anger-In	-0.07	0.05	-0.07	-1.61	0.107	0.00
Anger Duration	-0.06	0.05	-0.06	-1.35	0.179	0.00
Anger Control	0.06	0.06	0.06	1.04	0.298	0.00
Anger-Out	-0.09	0.07	-0.09	-1.31	0.191	0.00
Rage	0.12	0.07	0.11	1.81	0.070	0.01

a. Dependent Variable: Motivation

Interaction analysis:

Anger and Depression on Motivation

Anger Intensity/Frequency

Anger intensity/frequency and depression had a significant interaction effect (beta = -.10, p = .033), this influence is graphed below. This shows that as anger intensity/frequency increases, the relationship between depression and motivation changes from positive to negative.

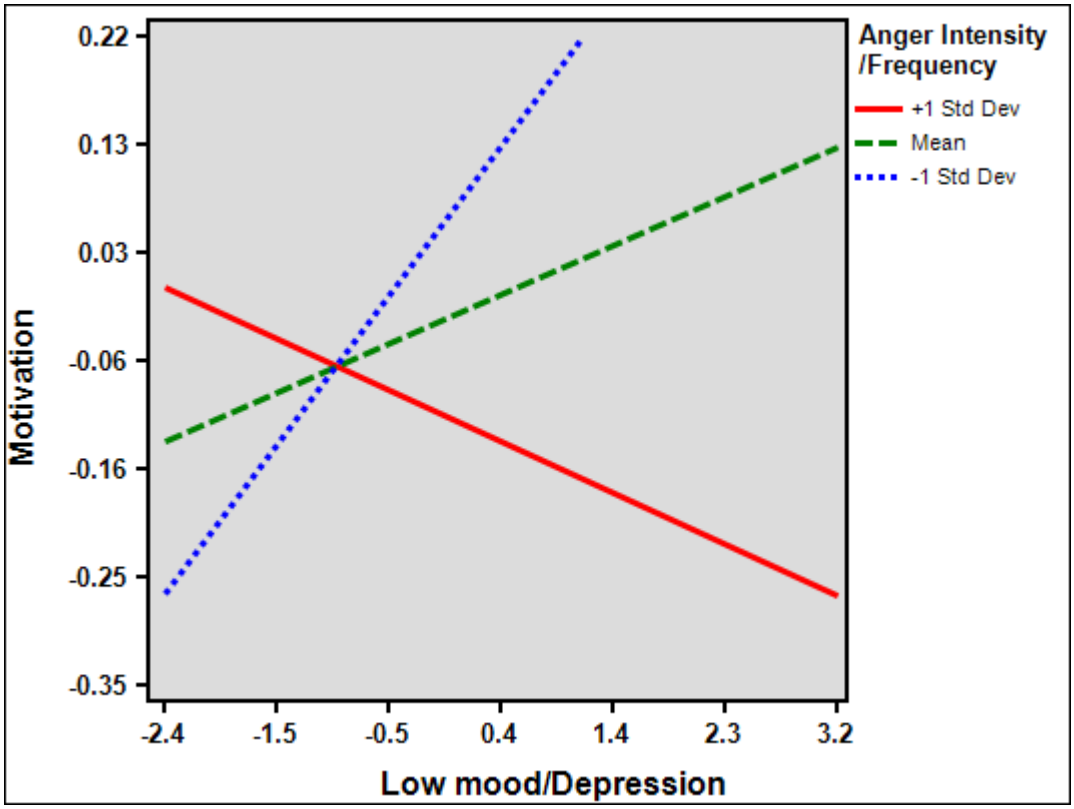

Figure 29: Relationship between Motivation and Low mood/Depression at different levels of Anger Intensity/Frequency

Goal Orientation

The regression model significantly predicted Goal Orientation, F(10, 590) = 5.30, p < .001, adj. R^2 = .07. The regression analysis found that low mood/depression (p = .011) and stress (p = .002) had significant effects on Goal Orientation. Anxiety and self-harm/suicidal ideation were not significant predictors of Goal Orientation. Of the anger factors, anger intensity/frequency (p = .014) and anger control (p = .014) significantly predicted Goal Orientation.

Table 20: Goal Orientation and Anger

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Cohen's f^2
		B	Std. Error	Beta			
1	(Constant)	-0.02	0.04		-0.47	0.637	0.00
	Low Mood/Depression	-0.17	0.05	-0.15	-3.52	0.000	0.02

	Anxiety	-0.10	0.04	-0.10	-2.18	0.030	0.01
	Stress	0.09	0.05	0.09	2.07	0.039	0.01
	Self-Harm/Suicidal Ideation	-0.07	0.05	-0.06	-1.42	0.155	0.00
2	(Constant)	-0.01	0.04		-0.36	0.717	0.00
	Low Mood/Depression	-0.12	0.05	-0.12	-2.55	0.011	0.01
	Anxiety	-0.08	0.05	-0.08	-1.67	0.096	0.00
	Stress	0.16	0.05	0.15	3.18	0.002	0.02
	Self-Harm/Suicidal Ideation	-0.04	0.05	-0.04	-0.76	0.445	0.00
	Anger Intensity/Frequency	-0.18	0.07	-0.18	-2.48	0.014	0.01
	Anger-In	-0.05	0.05	-0.05	-1.09	0.278	0.00
	Anger Duration	-0.04	0.05	-0.04	-0.88	0.377	0.00
	Anger Control	0.14	0.06	0.14	2.48	0.014	0.01
	Anger-Out	0.13	0.07	0.12	1.90	0.058	0.01
	Rage	0.03	0.07	0.02	0.39	0.697	0.00

a. Dependent Variable: Goal Orientation

4: Discussion:

4.1 Anger and Mental Ill Health

Anger was strongly related to both the presence of mental health conditions in general as well as elevated levels of low mood/depression, anxiety, stress, and self-harm/suicidal ideation. Participants who were currently experiencing some form of mental health condition rated themselves as being significantly higher in anger intensity/frequency, lower in anger control, and higher in both anger-out and rage. Significant correlations were found between all six anger factors and four areas of ill mental health, with the exception of low mood/depression and anger control, broadly supporting hypothesis 1.

These findings are in line with those reported by Barrett, Mills, and Teesson (2013), and Hawkins and Cougle (2011) who identified clear relationships between anger and a variety of specific mental health disorders. In the current study even using as broad a statement as "I am currently experiencing a mental health condition" was enough to produce significant differences in four anger factors between groups, suggesting that increased levels of several anger components are common when suffering mental ill health. The two exceptions, those that showed no significant difference between groups, were anger-in and anger duration, though these factors did show consistent, small correlations with the four general areas of mental ill health. This lack of statistical significance may have arisen as a result of order of entry into the regression model, as many of the anger components can be expected to share influence on the variance they may have a suppressing effect on those entered later into the regression model.

A significant, positive relationship was observed between depression and anger-out, as well as between anxiety and anger-in in the regression models. These relationships support previous findings suggesting links between depression and anger-out, or anger expression

(Brody et al., 1999), and anxiety being more associated with anger-in, or anger suppression (Deschenes et al., 2012). These findings support the prediction made by hypothesis 2, though it is important to note that the wider literature is still mixed on the subject. While greater attempt was made to control for comorbid variables in the present study, a non-clinical sample may not perform precisely in the same way as a clinical sample.

The regression models investigating stress and self-harm/suicidal ideation also highlighted the importance of rage. In the case of stress, rage had a significant negative relationship, suggesting that those experiencing high levels of stress were either less likely to experience rage, or that rage provided some sort of relief from stress. Rage had a positive relationship with self-harm/suicidal ideation, this may be due to participants responding as if rage were a more extreme version of anger and self-harm/suicide items reflected a more severe depression. This fits the broad picture in the literature of more intense and extreme anger being related to suicide risk (e.g. Bae et al., 2013; Lee, Choi, Kim, Park, & Shin, 2009; Engin, Gurkan, Dulgerler, & Arabaci, 2009), and the idea that combing depression with another intense affective state is a key indicator for identifying potential suicide crises (Hendin, Maltsberger, Lipschitz, Hass, & Kyle, 2001: Rudd et al., 2006).

While significant in a simple bivariate correlation, anger duration and anger control did not have direct relationships with low mood/depression, anxiety, stress, or self-harm/suicidal ideation when all other anger or mental ill health variables were controlled for. The relationships between mental ill health variables and anger factors appear to be more directly related to either the intensity/frequency of feelings of anger, or the anger expression style adopted by the participant.

In sum, findings from prior studies were broadly supported, and anger was found to be related both to the presence of a mental health condition, as well as to mental ill health

factors in general without regard for clinical significance. One limiting factor in the present analysis is that, unlike in the study by Barrett, Mills, and Teesson (2013), participants were required to self-select whether or not they had a current mental health condition. As such many conditions, from severe and confirmed to minor and suspect have all been condensed into a single label. As severe conditions are rarer, it may be the case that the 'mental health condition' group represents a lower severity, and the differences in anger between healthy participants and those with confirmed diagnoses may be significantly greater.

4.2 Global Well-Being Items and Anger

Both the global well-being and the global life satisfaction items showed significant detrimental independent main effects for anger intensity/frequency and anger duration when controlling for low mood/depression, anxiety, stress, and self-harm/suicidal ideation, the global well-being item was also significantly predicted by rage. In both cases anger intensity/frequency and anger duration were negatively related to agreement that well-being or life satisfaction was good. However, in the case of well-being, rage had a significant positive relationship. This finding represents a considerable challenge to hypothesis 3, whilst higher anger intensity/frequency was associated with lower global well-being scores, rage, presumably representing an intense anger subtype, did displayed the opposite relationship.

For these very broad measures, the findings supports the idea that a general increase in anger intensity, frequency, or duration is associated with lower well-being and lower life satisfaction – with increased anger behaving similarly to depression, anxiety, stress, or self-harm/suicidal ideation. These findings fit the model of anger characterised as a straightforward 'negative' emotion, it may have some specific complexities with certain areas of well-being, but the general implication is that more frequent/intense or longer anger episodes are associated with poorer well-being and life satisfaction. The interesting

divergence from this basic model stems from the positive relationship between rage and agreement with the item “My well-being has been good”. If rage is conceptualised as an extreme form of anger, then it would be expected to have a negative influence similar to that of the anger intensity/frequency factor. However, rage may play a far more functional role than ordinary anger. Rage is sometimes distinguished from anger as a response to injustice, particularly those inflicted on the self, or as a response to shame and humiliation (Lewis, 1993), and is used as a motivator to rectify the situation. There is also the complicating factor that Sell, Tooby, and Cosmides (2009) noted when they found that those who felt they were entitled to better treatment were typically more prone to anger – in other words, people who think very highly of themselves may also be more prone to rage as more situations could be seen as unjust or as attacks on their self-esteem. Indeed, in the current study rage was positively associated with levels of self-esteem ($p = .019$, Beta = .138). This positive relationship between rage and the global measure of well-being may either reflect this self-esteem rage-proneness, or the functional ability of rage to better secure what the participant sees as acceptable treatment. While rage is linked to increased likelihood of taking physical or verbal revenge or retribution on the objects or ire (McColl-Kennedy, Patterson, Smith, & Brady, 2009), vengeance taking has usually been found to make people less happy (Carlsmith, Wilson, & Gilbert, 2008), though some studies find the prospect of a brief burst of savage pleasure as motivating and rewarding revenge behaviours (Chester & DeWall, 2017). However, as the current study looks at these feelings and emotions over a 6 week period, it may be that rage motivates enough vengeful or controlling behaviours to enforce more long-term improvements in peoples’ lives, leading to higher levels of well-being as threats and injustices are rapidly confronted and acted upon. Indeed, McCullough, Kurzban, and Tabak (2013) propose this very function in a societal and evolutionary perspective.

4.3 Anger and Well-Being Factors

Anger was expected to have a mixed relationship with the well-being factors, potentially be associated with higher self-esteem, positive affect, motivation, and resilience, but lower emotional stability for example. However, the findings of the present study suggest an even more complicated set of relationships, with increased levels of anger and reduced anger control typically have negative or non-significant relationships with most of the well-being variables. However, some positive relationships were identified as hypothesized.

Increased anger intensity/frequency was associated with lower self-esteem, reduced emotional stability, increased worry, poorer mental health resilience, poorer social life quality, lower levels of goal orientation, and increased fatigue. This trend was broken by a positive relationship between general resilience and anger intensity/frequency where increased anger intensity/frequency predicted higher levels of general resilience. No significant relationships between anger intensity/frequency and positive affect, sleep quality, or social support were found. These findings offer support for hypotheses 7 and 8 though they directly contradict or deviate partially from hypotheses 4, 5, and 6, and partially 9.

Increased anger-in was associated with lower self-esteem, lower mental health resilience, and lower general resilience. No main effects were found for positive affect, sleep quality, emotional stability, worry, social support, social life quality, goal orientation, motivation, or fatigue.

Increased anger duration led to reduced positive affect, sleep quality, general resilience, and social life quality. No main effects were found for emotional stability, self-esteem, worry, mental health resilience, social support, goal orientation, motivation, or fatigue.

Higher anger control was positively associated with emotional stability, self-esteem, goal orientation, and general and mental health resilience. No main effects were found for positive affect, sleep quality, worry, social support, social life quality, motivation or fatigue.

Increased anger-out was negatively associated with both sleep quality and emotional stability, but shared a positive relationship with social life quality. No main effects were found for positive affect, self-esteem, worry, mental health or general resilience, social support, goal orientation, motivation or fatigue.

Higher levels of rage were associated with increased sleep quality, higher self-esteem, lower worry, reduced social support, and lower levels of fatigue. No main effects were found for positive affect, emotional stability, mental health or general resilience, goal orientation, motivation, or social life quality.

Perhaps the most troubling findings, for those wishing to characterise anger as a straightforward negative emotional state, are the lack of significant relationships between anger components and Positive Affect as well as Social Support. While previous studies have linked both higher anger to increased positive affect (e.g. Harmon-Jones et al., 2009) as well as higher anger-in to lower levels of positive affect (e.g. Stewart et al., 2008), neither relationship was supported in the current study. This may be due to positive affect being measured using the PANAS in past studies, a scale that considers feelings like vigilance and alertness to be positive states despite clear associations with fear, threat, avoidance etc. (Diener et al., 2009). The Positive Affect factor in the present study is comprised of items more consistently related to positive affect (e.g. feeling cheerful/joyful, feeling happy, being in a good mood, etc.), and as such may not be as vulnerable to interpreting fairly neutral or ambiguous emotional states as proscriptively positive. The only anger factor that had a significant independent relationship with positive affect was anger duration, where higher

levels of anger duration (indicating longer anger episodes and slower recovery from anger) was negatively predictive of positive affect. This suggests that, while no other anger factors have a direct relationship, being able to quickly recover from anger and restore normal emotional states is of benefit to emotional well-being – perhaps because it leaves more space for positive emotions.

Another core facet of well-being that has been examined in the past is social support. Higher levels of anger have been linked with breakdowns in social support networks through interpersonal conflict, hostility, and aggression (Gallo & Smith, 1999). Perceived levels of social support resources have also been negatively linked to anger (Diong et al., 2005). The results of the current study show no direct link between most anger factors and perceived social support, with the exception of rage which is negatively associated with the social support factor. These lack of direct links may be a result of controlling for the effects of depression, anxiety, stress, and self-harm/suicidal ideation, though stress, anxiety, and severe depression were featured in the model by Diong et al. (2005) It is possible that only the rage factor is capable of exerting a direct effect on social support as it may characterise a more extreme form of anger, or a set of anger behaviours that lead to greater social distancing by either manifesting in stronger feelings of independence or distasteful displays of anger that drive others away.

Better sleep quality had significant negative relationships with increased anger duration, anger-out, and a significant positive relationship with increased rage. Previous studies have implicated anger control (Hisler & Krizan, 2017), trait anger (Shin et al., 2005), and anger suppression (Caska et al., 2009) in poorer sleep quality. The causal direction in the sleep-anger relationship may run both ways, Kamphius, Meerlo, Koolhaas, and Lancel (2012) found, in their review of the literature, that treating sleep disturbances led to reductions in hostility (e.g. Booth, Fedoroff, Curry, & Douglass, 2006; Haynes et al., 2006) and

experimentally depriving participants of sleep increased aggression (Kahn-Greene, Lipizzi, Conrad, Kamimori, & Killgore, 2006), though other studies found no effect of sleep deprivation on aggression (Vohs, Glass, Maddox, & Markman, 2011). Contrary to these studies, the results of the present study indicate, when controlling for other negative mood states, no link between anger control and sleep quality, no link between anger-in and sleep quality. Instead, findings indicated that anger-out was negatively predictive of sleep quality, and a positive association between rage and sleep quality. It is worth noting that Hisler and Krizan controlled for stress, Shin et al. controlled for depression, and Caska et al. controlled for only demographic and smoking/alcohol consumption in their studies, and as such their findings may be confounded by the presence of negative moods frequently comorbid with anger. Arbinaga (2017) found that higher trait anger was linked to poorer subjective sleep quality, as well as both higher anger-in and anger-out, while the current study did not find a link between sleep quality and anger-in, anger-out was found to be negatively related to sleep quality. Perhaps the most counter-intuitive finding was the linkage between increased rage and better sleep quality. This result is surprising as better sleep is associated with a higher capacity for regulating intense emotional arousal (Yoo, Gujar, Hu, Jolesz, & Walker, 2007), thus higher levels of rage being associated with higher sleep quality in the present study is unexpected. One possible avenue of explanation stems from the link between better quality sleep and the preservation or reinforcement of emotional memory (Wagner, Gais, & Born, 2001; Rasch & Born, 2013). It may be the case that sleep preserves the memories of rage-inducing experiences, thereby allowing that rage to sustain for longer periods of time or occur more frequently as rumination becomes easier. A post-hoc correlational analysis between rage and the item “I frequently couldn’t stop thinking about the things that made me angry” found a moderate correlation ($r = .479$, $p < .001$), providing some support for this link between rage and rumination.

In a related vein, anger has been characterised as an 'energising' emotion for fuelling behaviour, arousal, and reducing inhibition (Novaco, 2010). As such, it is possible that higher levels of anger may reduce feelings of fatigue. Fatigue has also been linked to increases in both irritability (e.g. after performing a mentally demanding job; Warm & Dember, 1986), and greater impulsivity as inhibition control declines, potentially leading to increased aggression (Kaplan, 1987). The results show a significant positive relationship between fatigue and anger intensity/frequency, possibly driven by the individual irritability and frustration items, which fits with the idea of fatigue leading to increased levels of anger. However, rage shared a negative relationship with fatigue. This suggests that participants who felt less fatigued were more likely to report higher levels of rage, possibly indicating some support for Novaco's conceptualisation as anger being energising, or perhaps rage is simply a more energetically demanding emotion and fatigued participants were less capable of generating the energy required to enter such a state as frequently. The link between rage and better sleep quality could certainly be seen as supporting the idea that rage is a form of anger than requires one to be well-rested.

Despite many descriptions of anger as a motivating emotion, either as a direct feeling or a functional cause of increased corrective action taking (e.g. Tagney & Dearing, 2002), no significant relationships were identified between the six anger factors and how motivated participants' reported feeling. While much of the literature debates the role of anger in approach/avoid motivation scenarios (e.g. Harmon-Jones &Allen, 1998), many authors highlight anger as an energising emotion that arises as a result of goal frustration and drives people to take actions towards attempting to achieve those goals again (Berkowtiz, 1993; Novaco, 2010; Shaver et al., 1987). Indeed, this view is often shared by athletes who credit anger as motivating their performance in competitive events and driving them to push themselves further (Ruiz & Hanin, 2011). It is possible that such a motivating effect from

anger does exist, but it does not appear to have a larger enough effect that it is noticeable over a six-week period, or it may be limited to extreme contexts like physical competition. Goal orientation was negatively predicted by anger intensity/frequency and positively predicted by anger control. This is perhaps contrary to what one might expect – surely those who are more goal-oriented would more frequently fail to achieve goals and thus experience greater goal frustration and related anger? In the present study the opposite appears to be supported by the results - greater goal orientation was characterised by better anger control and lower anger in general. One explanation for these findings could be derived from the work of Schmitt, Gielnik, and Seibel (2018) who found that high levels of anger during the pursuit of a goal was negatively associated with achieving that goal later on. They attribute this decline in success to anger lowering the amount of persistence with which people pursued goals, possibly via a decline in emotional regulation abilities as a result of the increased anger. This picture much better fits the present findings, suggesting that the link between high anger intensity/frequency and lower goal orientation arises from lower persistence and greater distractibility, and anger control has a positive relationship due to increased ability to rein in that anger. It is possible that anger is useful for achieving goals in limited contexts (e.g. physical competition), but for the broadly university-oriented sample in the current study it appears to be detrimental to their ability or inclination to focus on and set goals.

Although higher anger-out was associated with reduced sleep quality and emotional stability, it did have a positive relationship with better social life quality. One possible explanation for this is not that increased propensity towards expressing anger improves ones' social life, though it may, but that those who perceive themselves as socially dominant (and presumably consider their social lives to be going well) express their anger more freely than those who feel they are lower in social status. Allan and Gilbert (2002) found that participants were significantly more willing to engage in anger-out behaviours if they perceived the

people they were interacting with as lower in social rank than themselves. As such increased anger-out may simply be a result of greater levels of social dominance. Although no relationship was found between anger-out and self-esteem, anger-in was associated with lower self-esteem, possibly again reflecting a relationship between anger expression and perception of social standing.

Another curious finding was that anger intensity/frequency was associated with higher levels of the general resilience factor, but negatively related to the mental health resilience factor. The negative relationship with mental health resilience was predictable as all anger components were found to be related in some way to indicators of poor psychological health such as depression, anxiety, and stress. Fredrickson, Tugade, Waugh, and Larkin (2003) found that anger was negatively related to resilience, though on deeper analysis they also found that participants in the high and low resilience groups were equal in reported anger frequency though high resilience participants also reported a greater frequency of overtly positive emotions as well. One possible avenue towards an explanation for the positive relationship between anger intensity/frequency and general resilience may stem from a study into adaptive and maladaptive anger and resilience in a driving scenario reported by Gras et al. (2016). In their study they found that resilience was only related to adaptive/constructive anger behaviours in driving, and had no relationship with maladaptive angry driving behaviours. So, the positive relationship in the current study may arise from that connection to adaptive anger behaviours arising from increased anger intensity/frequency, and as no opposite relationship exists with maladaptive or unhelpful behaviours, the relationship stays positive rather than evening out.

Of all the anger factors, the only one to not have a generally negative relationship with well-being factors, when having any relationship at all, was rage. Rage was associated with better sleep quality, higher self-esteem, less worry, and less fatigue. Perhaps

paradoxically, anger intensity/frequency was associated with lower self-esteem, increased worry, and increased fatigue. These findings, coupled with the earlier finding of rage having a positive relationship with the global well-being item, reinforce the idea that rage may not simply be a straightforward extension of anger along a linear continuum. The current findings provide evidence against Berkowitz' (2012) argument that there are no subtypes to anger, and that all expressions of anger are merely variations of intensity of a prototypic state. Indeed, anger items relating to feeling frustrated, angry, and irritated all coalesced into the anger intensity/frequency factor, but rage was sufficiently different to separate out following factor analysis of a large sample. However, it is still possible that rage could be a simple increase in anger intensity, but once anger passes a certain intensity it operates differently (in this case apparently more functionally). Rage may be so all-consuming that it focuses the mind, pushing aside other emotions or feelings like worry and fatigue, and shielding self-esteem. Kernis, Grannemann, and Barclay (1989) found that participants with unstable high self-esteem were more prone to anger and hostility than those with low or stable high self-esteem. They posited that this may arise from people with unstable high self-esteem having a positive, but fragile view of themselves which necessitates frequent outbursts of anger to defend from threats. Whatever the case, such a distinction is not possible to draw from the results of the current study and the relationship between a more general anger and rage warrants further investigation.

4.4 Anger as a protective moderating influence

While anger and indicators of psychological distress are frequently comorbid, this comorbidity may serve some sort of functional purpose, with anger possibly serving as a tool to protect oneself from the effects of anxiety, depression, and stress on psychological well-being. Novaco (2010) highlighted several possible protective functions of anger including protecting self-esteem, suppressing fear and anxiety, and increasing feelings of control. Other

researchers have pointed out that anger is used even by psychologically healthy individuals to cause others to value their welfare more highly or to get the upper-hand in negotiations (e.g. Sell, Tooby, & Cosmides, 2009; van Kleef, de Dreu, & Manstead, 2004). In order to investigate the potential role of anger as a protective response to feelings of depression, anxiety, or stress, a series of interaction analyses were carried out to see if any of the six anger components showed signs of moderating the relationship between these signs of psychological distress and various well-being variables.

On a global level, using the "My well-being has been good" and "I have been satisfied with the quality of my life" items, no such interactions effects were detected. However, significant interaction effects were identified between psychological distress indicators and anger factors in relation to positive affect, emotional stability, self-esteem, worry, social support, and social life quality. The general trends suggest that higher levels of anger, and particularly tendency towards openly expressing that anger rather than suppressing it, did produce weaker relationships between the psychological distress indicators and these areas of well-being.

The relationship between positive affect and low mood/depression became increasingly negative as anger-in and anger control increased, but became less negative in the presence of high anger-out and rage. This suggests that suppressing or controlling anger leaves positive affect more vulnerable to low mood/depression, whereas feeling greater rage and an increased tendency toward expressing anger may protect positive affect from the direct effects of low mood/depression. Considering that none of these four anger factors had any main effect on positive affect, but serve to moderate the strength of the relationship between low mood/depression on positive affect, feeling rage and expressing anger may be beneficial for those experiencing low mood/depression. The same four anger factors served to moderate the relationship between positive affect and anxiety in the same fashion. For stress,

only rage moderated its relationship with positive affect by weakening the relationship – those high in rage had no relationship between stress and positive affect, but those low in rage showed a significant negative relationship. Foa et al. (1995) proposed that anger is a more comfortable emotion than anxiety, and that people may adopt anger in order to reduce the negative emotional impact of psychological distress. The results of the current study did not show anger intensity/frequency as moderating the relationship between psychological distress indicators and positive affect, but instead highlighted anger expression styles and rage as being the important moderators. It also highlighted that anger suppression and control in particular can make the relationship between positive affect and low mood/depression and anxiety stronger, suggesting that such behaviours are emotionally unhealthy and may leave people more vulnerable to reductions in positive affect as a result of psychological distress. These findings are broadly supportive of hypothesis 11, but it is unclear whether these results are driven by positive feelings that accompany anger expression, displacement of blame, or a more assertive set of coping strategies.

For self-esteem a slightly different set of moderating relationships was identified. No anger factors appeared to moderate the relationship between depression and self-esteem – contrary to the idea that anger protects self-esteem from guilt (a core symptom of depression; Velotti, 2017; Barazzone & Davey, 2009). However, the relationship between self-esteem and anxiety was moderated by anger intensity/frequency, anger-out and rage. In all three cases, increased levels of these anger factors was associated with a weakening of the negative relationship between self-esteem and anxiety. Somewhat paradoxically, anger intensity/frequency did have a negative main effect on self-esteem, confirming the idea that anger and self-esteem are negatively associated (Stewart et al., 2008), but it also appears to offer some benefits in its ability to dampen the relationship between anxiety and self-esteem. Anger-out provided a similar benefit here in the case of anxiety and self-esteem, though it did

not have a direct relationship with self-esteem on its own. Rage also appeared again as also weakening the anxiety-self-esteem link, as well as having a positive main effect on self-esteem. Both anger intensity/frequency and rage interacted with the effect of stress on self-esteem, anger intensity-frequency reducing the relationship from negative to none as it increased, and rage flipping the relationship from negative to positive as it increased. These findings broadly support hypothesis 10, however the lack of moderation effects of anger on the relationship between depression and self-esteem suggests that it is not universally true.

The relationship between low mood/depression and anxiety on social support was also moderated by several of the anger factors. Increased anger duration was associated with a greater negative relationship between low mood/depression and social support, whereas increased rage was associated with a weaker relationship. For anxiety, elevated levels of both anger-in and anger-out were associated with a weakening of the negative relationship between anxiety and social support. This is somewhat at odds with the general trend for anger-in, which typically appears to be associated with a strengthening of negative relationships, and it is curious that both anger expression styles, at least at the high end of the distribution, appear to be beneficial at protecting levels of social support from the influence of anxiety. While the interaction effect between anger-out and anxiety on social support may be supported by the idea of anger expression being used to garner more focus on the individual's welfare from others (e.g. Sell, Tooby, & Cosmides, 2009), the apparent effectiveness of anger-in does not have such a ready explanation in the literature. Dahlen and Martin (2005) found that anger-in was linked to lower levels of perceived social support (a finding not replicated in the current study), positing that anger-in leads to social withdrawal and greater isolation. Perhaps this withdrawal proffers some benefit in the case of anxiety when considering perceived social support. Another possibility is that higher levels of anger-in reflect a general emotionally suppressive style, thus equally increasing the individual's

ability to suppress their anxiety and function normally. However, such an explanation is not well supported – emotional suppression has been consistently linked to worse emotional distress, poorer coping, and lower levels of perceived social support (Diong & Bishop, 1999; Roohafza et al., 2014; Gross & John, 2003; English, John, Srivastava, & Gross, 2012). In a related matter, the negative relationship between low mood/depression and social life quality was strengthened by anger-in, and the negative relationship between anxiety and social life quality was weakened by anger-out. Here we see anger expression filling a more expected role: anger suppression worsens the problem, anger-out improves the situation.

Worry was the only area where anger factors moderated the relationship with stress more than with low mood/depression or anxiety. No interactions were identified between anger factors and low mood/depression on worry, and only anger intensity/frequency moderated the relationship between anxiety and worry (in this case weakening the relationship). The effect of stress on worry was moderated by anger intensity/frequency, anger control, anger-out, and rage. As with positive affect, higher levels of anger control were associated with a poorer situation – a strengthening of the relationship between stress and worry. The remaining three anger factors all weakened the relationship between stress and worry. The seemingly positive benefit of anger intensity/frequency and rage in this case may result from greater feelings of control (e.g. Tagney & Dearing, 2002), possibly reducing worry by increasing certainty or motivating people towards action (good or bad) rather than being caught in indecision.

Where interactions were found between low mood/depression, anxiety, stress and the anger factors, increased anger intensity/frequency, anger-out, and rage tended to weaken the relationships between measures of psychological ill health and facets of well-being. Anger-in and anger control tended to strengthen those relationships. These findings provide some support for the idea of anger as a protective emotion, employed during psychological distress

to alleviate some of the negative impact on well-being. However, such an effect appears to be limited to certain types of psychological distress and on specific areas of well-being – primarily between low mood/depression and anxiety on positive affect, anxiety and stress on self-esteem, and stress on worry. This protective, or ameliorative effect does not appear to extend to the broader, single item measures of well-being. It is worth noting that this is only one of several possible explanations. Another possible interpretation is that higher anger intensity/frequency, anger-out, and rage reflects different types of depression, anxiety, or stress, different profiles of the same disorders associated with different behaviours or symptoms yet still falling under those umbrella terms. As such it may not be anger that is the important moderator here, but the particular subtype of anxiety or depression that the participant is experiencing. Nor is anger a clearly desirable emotion for those experiencing psychological distress. The main effects of anger in the regression models, after controlling for low mood/depression, anxiety, stress, and self-harm/suicidal ideation, show that, aside from rage, most of the anger components are regularly linked to poorer well-being with the exception of anger control (which appears to be unhelpful in interaction models).

4.5 Anger, Mental Health, and Well-Being: A new look

The findings of the present study serve to highlight the independent relationship between the six anger components and well-being. The relationships between anger components and well-being factors were mixed between associations with poorer well-being, some areas of better well-being, and many areas showing no relationship. However, the new factor, anger duration, was the only anger component to have a direct relationship with positive affect, where increased anger duration was associated with lower positive affect.

The analysis of interactions showed an interesting pattern of results with higher levels of anger-in and anger control exacerbating the negative relationship between depression and

positive affect, whereas increasing levels of anger-out and rage weakened the relationship. Anger-out and rage showed this same moderating influence in relation to self-esteem and anxiety, worry and stress, and depression and social support (for rage only). The beneficial influence of increasing anger intensity/frequency appeared to be limited to relationships between self-esteem and anxiety and worry and anxiety and stress. This suggests that anger intensity, anger-out and rage may be serving a useful function in reducing the influence of depression, anxiety and stress on a limited number of well-being factors. These relationships lend weight to the idea that anger may serve a functional purpose in mental health, being employed to protect areas of well-being like self-esteem from conditions like depression or anxiety. Given that these relationships occur even in a large general sample it suggests that anger may be a useful emotion for protecting well-being from negative emotions even at sub-clinical levels.

Of particular interest was the general pattern of the anger component rage appearing far more like a positive emotional state as opposed to a negative one. It is also significant that the initial exploratory factor analysis separated it from anger intensity/frequency into a distinct factor, suggesting that it may be a true subtype of anger rather than featuring on a continuum as suggested by Berkowtiz (2012) Rage was associated with better self-esteem, lower worry, lower fatigue, and better sleep quality. The only direct negative relationship it shared with the well-being factors was with social support. It also moderated the highest number of relationships between indicators of mental ill health and well-being factors. Rage was also the only anger component to have a significant positive relationship with the single-item measure of global well-being. Given the connection between rage and suicidal ideation/self-harm discussed previously, it clearly stands out as an unusual variable. Presenting a seemingly beneficial set of relationships and moderating influences to well-being, whilst also maintaining a significant relationship with suicidal ideation and suicide risk

in the literature. Rage warrants further future investigation, particularly with regards to what motivates rage and how it manifests in non-clinical and clinical samples.

4.6 Limitations

The present study and its findings are subject to several key limitations. Firstly, there was no experimental manipulation of anger and as such any causal inferences from the results should be considered speculative and tenuous. Secondly, although anger items were created to strongly resemble existing measures there is no guarantee that this resemblance translates into reliable direct comparisons, as such when considering deviations from the findings of previous studies some caution is required. Thirdly, a number of potentially important confounding factors were not controlled for in the study – one example, also highlighted in Barrett, Teesson, and Mills (2013), is the presence of clinical or subclinical personality disorders that have been shown to have considerable relationships with anger and anger expression (e.g. Baer and Sauer, 2011). This study also does not necessarily reflect the general population, as noted in the demographics the sample is heavily biased towards young, female, white university students and as such may not well reflect the anger experiences of other groups accurately. Schieman (1999) highlighted how age along with psychosocial and environmental differences between age groups could play a role in shaping anger proneness. Finally, the full regression models tended to only explain between 10% and 30% of the variance on the well-being factors, suggesting that there are many important factors unaccounted for that could add much greater complexity to the role of anger in well-being.

Common method bias is a prominent methodological issue when using questionnaires for data collection (Jakobsen & Jensen, 2015). When data for both the dependent and independent variables are collected with the same method, and particularly in within the same survey, there is a risk of systematic variance amongst the variables will influence the size or

nature of the relationship between these variables (Podsakoff, MacKenzie, & Podsakoff, 2012). In the case of the present research bias can originate from four different areas: the information source (e.g. the participants), the item characteristics, the item context, and the measurement context (Jakobsen & Jensen, 2015). Paulhus and Vazire (1991) noted that survey respondents often have a response tendencies that are susceptible to appear based on the format of the survey rather than the context. The most common example of this is social desirability, where participant's responses are influenced by their desire to appear favourably in the eyes of either themselves or the researcher. A more subtle type of bias is consistency – participants may artificially attempt to ensure they respond similarly to similar questions, even if a more truthful response would be inconsistent (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). A further bias, of particular concern when attempting to understand the relationship between different emotional or psychological states, stems from the affect state of the participant during the response period. For example, a participant in a very negative affectual state is likely to respond consistently negatively to items even if there is no true relationship between them (Watson & Clarke, 1984; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

The survey items themselves can also contribute to the influence of common method bias on findings. Features such as complexity, ambiguity, and abstract wording may lead to participants interpreting questions differently from one another, answer randomly, or lean more heavily on pre-existing tendencies in response patterns (Podsakoff, MacKenzie, & Podsakoff, 2012). Care was taken during item formulation to ensure that the wording of the items was direct and straightforward, and testing of earlier datasets for the Bristol Well-Being Scale was used to identify and remove or reword items with inconsistent relationships or response distributions. Similarity of scale characteristics have also been identified as a source of common method bias (Tourangeua, Rips, & Rasinski, 2000). Feldman and Lynch (1988)

reasoned that a shared response format increases the risk that participants rely on the same cognitive processes to inform their responses to those questions. Some researchers, such as Kothandapani (1971) have measured considerable differences in the size of correlations between latent variables when contrasting single-scale and mixed-scale measurement methods. Common scale labelling has also been linked to small changes in the size of relationships between different constructs (e.g. Weijters, Cabooter, & Schillewaert, 2010), though this effect was reduced in scales that only labelled the extreme end points as was done in the present study. Podsakoff, MacKenzie, and Podsakoff (2012) also note the impracticality of attempting to diversify scales too much, and argue over-diversification can reduce content validity and make cross-scale comparisons less reliable.

One further confounding issue is whether all measures are equally impacted by common method bias. Baumgarter and Steemkamp (2001) found that the more balanced a measure was in terms of containing equal amounts of positively and negatively worded items the less it was affected by common method bias. With regards to the present study, it is unclear how well protected the latent variables under investigation are by attempts at balancing the measures. While the variables are primarily related to the highest loading variables displayed in Annex C Table 1, there may be many positive and negatively worded items with small loadings also contributing to the factor scores.

In their paper on common method variance caused by common method bias, Siemsen, Roth, and Oliveira (2010) found that including the influence of common method variance is reduced as more independent variables are included in multivariate linear regression models if those variables are also affected by the same bias. They were also able to demonstrate that interaction terms cannot occur as artefacts resulting from common method bias, a finding initially discovered by Evans (1985), and that they instead can suffer severe deflation and become considerably more difficult to detect statistically. The authors argue that failure to

find hypothesised interaction effects may be due to severe attenuation from common method variance. This finding lends some support to the validity of the findings in the present study as the multiple regression models tended to include a large number of independent variables, and a considerable number of interaction effects were identified despite the large risk of common method bias and variance. Siemsen, Roth, and Oliveira (2010) note that their analysis did not account for other common method bias factors such as social desirability, and as such may generalise across all studies. However, a study examining the relationship between well-being measures and social desirability scales found that the construct validity of well-being scales was unaffected by social desirability, and attributed the relationship between well-being scales and social desirability scales as arising from content similarity (Kozma & Stones, 1988).

The findings of the present study must be considered in the light of their exposure to sources of common method bias. Firstly, many of the items invoke concepts that are abstract making them open to individual interpretation despite the attempts to write them as straightforward and direct as possible. For example, someone who is frequently very angry may consider their own anger to be fairly moderate as it is commonplace for them, whereas a less anger-inclined observer would rate them as very angry. Secondly, although the questions were framed as 'over the last 6 weeks' to avoid immediate or recent emotion from clouding how someone usually feels, it may have been the case that some participants found it difficult to accurately recall their emotional experience over a month-and-a-half and simply make an inaccurate estimate or went with more recent feelings. Thirdly, almost all items were measured on an identical ten-point scale with labelled end points, potentially introducing error of the kind identified by Kothandapani (1971). Fourthly, participants were required to complete an unusually long survey. This can introduce several artificial response patterns stemming from increasing response fatigue amongst the participants (Egleston, Miller, &

Meropol, 2011). Egleston, Miller, and Meropol (2011) found that inducing response fatigue could lead to increases or decreases in the power of the study depending on whether relative or absolute differences between variables or constructs was being measured. It is important to note however that they proposed three separate theoretical models for response fatigue, and it is unclear which might best apply to the present study.

While the threat of common method bias to the present study is likely to be considerable, it is unlikely to be particularly substantial. This is in part due to the protective effects of including numerous independent variables in the multiple regressions, as well as the evidence suggesting that interactions are unlikely to be spurious but rather deflated. Another cause for greater confidence in the validity of the findings stems from an analysis of 216 previously published correlations that found correlational relationships were inflated on average by 0.1 and in the majority of cases remained statistically significant (Malhorta, Kim, & Patil, 2006). However, as common method variance was not investigated or controlled for in the present study it is important to acknowledge the multi-faceted impact it may have on the findings.

Another threat to the interpretability of the present study's findings stems from multiple testing. Conducting a large number of comparisons through the use of multiple regression models greatly increases the risk of both type-1 and type-2 errors occurring (Benjamini & Hochberg, 2000). Therefore it is important to also focus on patterns of significant findings and how well they match both hypothesis and theoretical explanations.

A further important consideration is the tendency identified by Thomas and Diener (1990) for participants to overestimate the intensity of their recent emotional experiences and also to underestimate the frequency of those experiences. This, along with findings that positive memories are easier to recall compared to negative memories, adds an element of

systematic bias into any research involving surveying participants' well-being or mental health (Walker, Vogl, & Thompson, 1997). It is possible that the results of the present study reflect these biases and present an overestimation of intensity, an underestimation of frequency, and an under-reporting of negative emotional experiences. This effect may be further complicated amongst participants with depression as they have been found to be better able to recall negative experiences relative to positive experiences (Bergouignan et al., 2008).

4.7 Future Directions

The results of the current study provide the first steps towards understanding whether anger plays a role in protecting well-being from mental ill health. Further research is needed in order to determine whether these apparent moderating effects of anger on the relationship between psychological distress and well-being stem from different subtypes or profiles of, for example, depression or anxiety, or if they arise naturally as an instinctive defensive response. Another possibility that should be examined is the role of personality – do certain personality types lend themselves to using anger more than others when in distress? Does expressing anger always weaken the relationships between mental ill health and well-being, and does this compensate for losses in social support? One key question for future research is whether reducing anger through anger management may, temporarily, make some mental health conditions worse as key emotional tool is being removed. Such findings may have implications for the correct management of anger and an emphasis on replacing anger with another emotional or cognitive tool.

Another area that warrants closer investigation is how rage is distinct from other types of anger. In the present study rage was almost always associated with improved well-being when other indicators of psychological ill health and other anger factors were controlled for.

As such, a closer study of rage may help unearth the links underlying relationships between anger and positive affect in other studies (e.g. Harmon-Jones et al., 2009). One avenue that may shed greater light on the role of rage would be to identify whether rage has similar expression styles to anger. For example, if 'rage-in' and 'rage-out' styles existed, it may provide valuable insight into whether rage is always beneficial or if certain styles of rage are better suited for different problems.

Unlike many of the studies cited in this paper, with the major exceptions being Hawkins and Cougle (2011) and Barrett, Teeson, and Mills (2013), the present study examined a large non-clinical population as opposed to focusing on individuals with pre-diagnosed mental health conditions. A non-clinical population was chosen in order to allow for inferences to be drawn from the findings with regards to well-being and anger in general rather than in limited or unique circumstances. The relationship between anger and specific mental health disorders has been well-established, but little effort has been made to understand whether these connections exist at the sub-clinical level or are sustained across large representative samples of the general population. This also has the benefit of allowing the results to be more representative of anger factors in general. For example, Kim et al., (2014) noted that anger is not only experienced by those in clinical distress, but is a frequently evoked or chosen emotion by healthy individuals in order to respond to ordinary situations or to engage effectively in social interactions. If the sample was simply limited to those with specific mental health conditions it would be difficult to know if anger takes on a specific set of relationships in those circumstances that simply do not apply to how anger relates to the well-being or mental health of the average person.

Another important feature of investigating non-clinical populations is that, when measuring variables such as well-being or depression, the results are comprised of a fuller range of that emotional experience rather than simply sampling a portion of that spectrum.

For example, if the study had been limited to participants diagnosed with clinical depression, then the limits of the depression scores would have been bounded by the lowest clinical requirement. This would have made it difficult to support extrapolating the relationships between well-being, anger, and depression outside of that particular subsection of the depression spectrum.

4.8 Conclusion

As the findings in this area are generally mixed (e.g. Barrett, Teesson, & Mills, 2013; Campbell & Muncer, 2008), and more indicators of psychological ill health were controlled for, this result is not particularly surprising. Links were confirmed between anger and low mood/depression, anxiety, stress, and suicidal tendencies, with increased anger factor scores being associated with poorer psychological health. Specific associations between depression and anger-out (Brody et al., 1999), anxiety and anger-in (Deschenes et al., 2012), and rage and suicidal or self-harming risk (Hendin et al., 2001) were supported by the regression models. Anger duration and anger control did not have any direct relationships with the indicators of psychological ill health. Rage was found to have a negative relationship with stress, perhaps indicating its role as a stress reliever.

Anger factors generally performed similarly to depression, anxiety, stress and self-harm/suicidal ideation in relation to the different facets of well-being examined in this study. Several independent negative associations were identified between the anger factors and components of well-being. However, one exception was identified: higher levels of rage were associated with better self-esteem, better sleep, less worry, and less fatigue. This rage factor produced a profile of relationships that one might expect from a positive emotion rather than one typically labelled negative. The appearance of rage as a positive emotion lends credence to ideas advanced by Harmon-Jones et al. (2009), though this study dealt with feelings over a

period of six weeks as opposed to brief experimental exposures. Whether this effect stems from continual positive bursts from visceral incidences like revenge or justice-seeking or from some longer-term benefit of rage is unknown. What is clear is that rage is treated differently from other anger statements like ‘anger’, ‘frustration’, or ‘irritation’ by participants, and may represent a different side of the complex emotion of anger, or a more distinct emotion entirely. It is worth noting that, although the anger items were selected in order to reflect the factor structures found in previous studies, results of the factor analysis in the present study suggested that rage is separate from other markers of anger intensity (e.g. irritation, frustration, feeling angry). This finding is particularly significant as it may indicate that there are statistically distinct facets of anger that have been missed by existing anger measures. As such, care should be taken in future studies to ensure that rage is specifically represented in order to see if its appearance as a separate factor is replicable.

Including an analysis of the interactions between anger components and indicators of mental ill health has revealed a new aspect of anger that warrants further investigation. It demonstrates that the role of anger may not be limited to simply being a negative emotion, and that emotions that present broadly negatively or broadly positive may have deeper effects when considered in the light of how they influence the relationships of other emotion or well-being pairs. There was some evidence to support the idea of anger as a functional, protective emotion with the ability to spare some specific areas of well-being from the influence of negative emotions like low mood/depression, anxiety, and stress. This typically took the form of higher anger intensity/frequency, rage, or greater levels of anger expression being associated with a weakening of the negative relationships between indicators of psychological distress and positive affect, self-esteem, and worry. However, it is still unclear if this moderation effect is a result of the increased anger, or if it stems from anger being more common in different profiles of psychological distress that naturally have weaker

relationships with well-being. If anger does have a consistent moderating influence on how mental ill health interacts with well-being, then this may have significant implications for the treatment of comorbid anger in depression and anxiety. Further research is needed in order to understand how best to reduce anger and to ensure that any protection, maladaptive as it may be, is accounted for in the treatment process.

In summary, this study has extended our understanding of how anger factors influence well-being independent of other negative emotions, and highlighted the more unique role of rage as a positive performing emotion. Areas for further investigation regarding the idea of anger as a protective emotion have also been highlighted, offering evidence to narrow the scope primarily to positive affect and self-esteem as the likely targets of anger when experiencing psychological ill health.

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Appendices

Appendix A

Participant Metrics

Table A1: Participant Age Data

Statistics

What is your age in years?

N	Valid	1318
	Missing	18
Mean		26.27
Std. Error of Mean		.350
Median		21.00
Mode		19
Std. Deviation		12.718
Variance		161.745
Range		66
Minimum		18
Maximum		84
Percentiles	25	19.00
	50	21.00
	75	27.00

Table 21: Participant Gender Data

What gender do you identify as?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	317	23.7	24.0	24.0
	Female	993	74.3	75.3	99.3
	Other	9	.7	.7	100.0
	Total	1319	98.7	100.0	
Missing	System	17	1.3		
Total		1336	100.0		

Table A3: Participant Ethnicity Data

Ethnic Group or Background:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Arab	9	.7	.7	.7
	Asian/Asian British: Bangladeshi	6	.4	.5	1.1
	Asian/Asian British: Chinese	40	3.0	3.0	4.2
	Asian/Asian British: Indian	21	1.6	1.6	5.8
	Asian/Asian British: Pakistani	7	.5	.5	6.3
	Asian/Asian British: Other	19	1.4	1.4	7.7
	Black/Black British: African	12	.9	.9	8.6
	Black/Black British: Caribbean	3	.2	.2	8.9
	Black/Black British: Other	1	.1	.1	8.9
	Mixed/Multiple ethnic group: White and Asian	25	1.9	1.9	10.8
	Mixed/Multiple ethnic group: White and Black African	4	.3	.3	11.1
	Mixed/Multiple ethnic group: White and Black Caribbean	8	.6	.6	11.8
	Mixed/Multiple Ethnic group: Other	23	1.7	1.7	13.5
	White: English/Welsh/Scottish/Northern Irish/British	961	71.9	72.9	86.4
	White: Irish	18	1.3	1.4	87.7
	White: Other	153	11.5	11.6	99.3
	Other	9	.7	.7	100.0
	Total	1319	98.7	100.0	
Missing	System	17	1.3		
Total		1336	100.0		

Table A4: Participant Religion Data

Religion:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No religion	884	66.2	67.0	67.0
	Buddhist	15	1.1	1.1	68.2
	Christian (including Church of England/Ireland/Scotland, Catholic, Protestant and all other Christian denominations)	319	23.9	24.2	92.3
	Hindu	15	1.1	1.1	93.5

	Jewish	26	1.9	2.0	95.5
	Muslim	29	2.2	2.2	97.6
	Sikh	2	.1	.2	97.8
	Other	29	2.2	2.2	100.0
	Total	1319	98.7	100.0	
Missing	System	17	1.3		
Total		1336	100.0		

Table A5: Participant Study Time Data

How much time each week do you spend doing: - Studying

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 Hours	308	23.1	24.1	24.1
	1 - 10 hours	240	18.0	18.8	42.8
	11 - 20 hours	251	18.8	19.6	62.5
	21 - 30 hours	255	19.1	19.9	82.4
	31 - 40 hours	132	9.9	10.3	92.7
	40+ hours	93	7.0	7.3	100.0
	Total	1279	95.7	100.0	
Missing	System	57	4.3		
Total		1336	100.0		

Table A6: Participant Work Role Data

Work role:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not applicable	687	51.4	53.7	53.7
	Semi-skilled/unskilled manual worker	124	9.3	9.7	63.4
	Skilled manual worker	22	1.6	1.7	65.1
	Office worker/administrator	135	10.1	10.6	75.7
	Support/care worker	51	3.8	4.0	79.7
	Junior management	23	1.7	1.8	81.5

	Middle management	23	1.7	1.8	83.3
	Senior management	6	.4	.5	83.7
	Trained professional	98	7.3	7.7	91.4
	Other	110	8.2	8.6	100.0
	Total	1279	95.7	100.0	
Missing	System	57	4.3		
Total		1336	100.0		

Table A7: Participant Education Data

Highest education level attained

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No educational qualifications	12	.9	.9	.9
	GCSE or 'O' Levels	47	3.5	3.7	4.6
	'AS/A' Levels	604	45.2	47.2	51.8
	BTEC, NVQ or equivalent	60	4.5	4.7	56.5
	Apprenticeship	10	.7	.8	57.3
	Undergraduate degree	355	26.6	27.8	85.1
	Professional qualification	57	4.3	4.5	89.5
	Masters degree	84	6.3	6.6	96.1
	PhD/ Doctorate	18	1.3	1.4	97.5
	Other	32	2.4	2.5	100.0
	Total	1279	95.7	100.0	
Missing	System	57	4.3		
Total		1336	100.0		

Table A8: Participant Relationship Data

Relationship Status:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	534	40.0	41.0	41.0
	Short-term partner (Less than 6 months)	105	7.9	8.1	49.1

	Long-term partner (More than 6 months)	438	32.8	33.7	82.8
	Married	149	11.2	11.5	94.2
	Civil partnership	4	.3	.3	94.5
	Divorced	19	1.4	1.5	96.0
	Separated	6	.4	.5	96.5
	Widowed	6	.4	.5	96.9
	Casual relationship(s)	40	3.0	3.1	100.0
	Total	1301	97.4	100.0	
Missing	System	35	2.6		
Total		1336	100.0		

Appendix B

Descriptive Statistics

Table B1: Indicators of Mental Ill Health

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Depression	637	-2.40	3.22	-.01	.89
Anxiety	637	-2.43	1.89	.02	.97
Stress	637	-2.71	1.98	-.05	.90
Self-Harm/Suicidal Ideation	637	-1.01	4.03	-.04	.92
Valid N (listwise)	637				

Table B2: Well-Being Factors

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Positive Affect	637	-2.75	2.43	-.02	.94
Self-Esteem	637	-2.05	3.39	.08	.95
Fatigue	637	-1.94	2.62	-.02	.98
Sleep Quality	637	-2.21	2.63	-.03	.92
Resilience (General)	637	-2.86	2.40	.05	.91
Resilience (Mental Health)	637	-2.27	2.41	.08	.97
Emotional Stability	637	-2.38	2.21	.03	.96
Worry	637	-2.08	2.58	.07	.92
Social Life	637	-2.80	1.95	-.05	.96
Social Support	637	-3.82	1.85	.01	.91
Motivation	637	-2.30	2.36	.05	.93
Goal Orientation	637	-2.34	2.93	.02	.95
Valid N (listwise)	637				

Table B3: Anger Factors

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Anger	601	-1.76	2.40	.00	.94
Intensity/Frequency					
Anger-In	601	-1.92	1.67	.00	.93
Anger Duration	601	-2.49	1.41	.00	.92
Anger Control	601	-1.36	2.46	.00	.96
Anger-Out	601	-1.44	2.53	.00	.93

Rage	601	-3.57	1.27	.00	.90
Valid N (listwise)	601				

Table B4: Low Mood/Depression Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
During the last 6 weeks: - I have frequently felt depressed	637	1	10	4.48	2.95
During the last 6 weeks: - I have found it hard to experience pleasure from things I usually enjoy	637	1	10	4.14	2.90
During the last 6 weeks: - I have frequently felt unhappy	637	1	10	4.79	2.81
During the last 6 weeks: - I have frequently experienced low moods	637	1	10	5.49	2.88
Valid N (listwise)	637				

Table B5: Anxiety Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
During the last 6 weeks: - I have frequently avoided doing things that I wanted to do due to my anxiety	637	1	10	3.94	3.10
During the last 6 weeks: - I have frequently avoided doing things that I should have done due to my anxiety	637	1	10	4.05	3.12
During the last 6 weeks: - My anxiety has frequently interfered with my daily routine	637	1	10	3.67	2.97
During the last 6 weeks: - I have frequently avoided social situations due to my anxiety	637	1	10	3.81	3.03

During the last 6 weeks: - I have frequently felt anxious in social situations	637	1	10	4.54	3.08
During the last 6 weeks: - I have frequently experienced physical symptoms which I believed were caused by anxiety (e.g., cold or sweaty hands, shortness of breath, heart racing, etc.)	637	1	10	4.65	3.06
During the last 6 weeks: - I have frequently felt anxious for no obvious reason	637	1	10	4.41	2.95
During the last 6 weeks: - I have frequently felt anxious	637	1	10	5.87	2.90
During the last 6 weeks: - I have experienced panic attacks	637	1	10	3.00	2.92
During the last 6 weeks: - There have been unexpected events which have made me feel anxious	637	1	10	4.98	3.01
Valid N (listwise)	637				

Table B6: Motivation Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
During the last 6 weeks: - I frequently couldn't be bothered to do anything at all	637	1	10	5.91	2.98
During the last 6 weeks: - I have spent a lot of time just doing nothing when I had things I should have been doing	637	1	10	6.29	2.96
During the last 6 weeks: - I have had the motivation to get things done	637	1	10	5.81	2.68

During the last 6 weeks: - I have been productive and able to get things done	637	1	10	6.37	2.54
During the last 6 weeks: - I have sometimes needed prompting to get started on an activity	637	1	10	6.18	2.83
Valid N (listwise)	637				

Table B7: Self-Harm/Suicidal Ideation Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
During the last 6 weeks: - I have sometimes felt like self-harming	637	1	10	2.32	2.55
During the last 6 weeks: - I have attempted to or engaged in self-harm	637	1	10	1.65	1.93
During the last 6 weeks: - I have had suicidal thoughts	637	1	10	2.38	2.58
During the last 6 weeks: - I have felt that my life is hardly worth living	637	1	10	2.86	2.70
During the last 6 weeks: - I have frequently felt worthless	637	1	10	3.48	3.02
During the last 6 weeks: - I have attempted or intended to commit suicide	637	1	10	1.35	1.24
During the last 6 weeks: - I have frequently felt I have nothing to look forward to	637	1	10	3.25	2.91
Valid N (listwise)	637				

Table B8: Positive Affect Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation

During the last 6 weeks: - I have frequently felt cheerful or joyful	637	1	10	6.55	2.40
During the last 6 weeks: - I have frequently felt happy	637	1	10	6.46	2.43
During the last 6 weeks: - I have frequently been in a good mood	637	1	10	6.41	2.34
During the last 6 weeks: - I have felt that I lead a worthwhile life	637	1	10	6.23	2.65
During the last 6 weeks: - I have frequently felt engaged and interested in activities	637	1	10	6.11	2.58
During the last 6 weeks: - I have been satisfied with the quality of my life	637	1	10	6.35	2.46
During the last 6 weeks: - I have frequently felt calm and relaxed	637	1	10	5.45	2.51
During the last 6 weeks: - My well-being has been good	637	1	10	6.24	2.30
During the last 6 weeks: - I have frequently experienced strong positive emotions	637	1	10	6.51	2.47
Valid N (listwise)	637				

Table B9: Sleep Quality Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
During the last 6 weeks: - I have been satisfied with the quality of my sleep	637	1	10	4.67	2.59
During the last 6 weeks: - I have suffered from insomnia	637	1	10	4.29	3.15
During the last 6 weeks: - I have been unable to sleep due to my mind racing as a result of stress/anxiety/tension etc.	637	1	10	5.37	3.01

During the last 6 weeks: - I have worried about coping with the day due to a lack of sleep the previous night	637	1	10	5.57	3.21
During the last 6 weeks: - I have usually woken up fully refreshed and full of energy	637	1	10	4.36	2.57
Valid N (listwise)	637				

Table B10: Self-Esteem Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
During the last 6 weeks: - I have worried about other people's opinions of me	637	1	10	6.33	3.10
During the last 6 weeks: - I have thought that others did not seem to like me	637	1	10	6.03	3.09
During the last 6 weeks: - I have had low self esteem	637	1	10	6.09	3.06
During the last 6 weeks: - I have frequently lacked confidence in my own abilities	637	1	10	6.27	2.95
Valid N (listwise)	637				

Table B11: Social Life Quality Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
During the last 6 weeks: - I have been a sociable person	637	1	10	6.55	2.78
During the last 6 weeks: - I have felt confident in social situations with people I do not know	637	1	10	5.91	2.82
During the last 6 weeks: - I have been a popular person	637	1	10	5.37	2.46

During the last 6 weeks: - I have felt satisfied with the quality of social contact I have had	637	1	10	6.54	2.72
During the last 6 weeks: - I have felt confident in social situations with people that I know well	637	1	10	7.91	2.35
During the last 6 weeks: - I have felt satisfied with the amount of social contact I have had	637	1	10	6.29	2.85
During the last 6 weeks: - My social interactions have not been good	637	1	10	3.78	2.68
During the last 6 weeks: - I have been an easy person to get along with	637	1	10	7.46	2.24
Valid N (listwise)	637				

Table B12: Resilience (General) Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
The following questions ask about how you cope in difficult situationsDuring the last 6 weeks: - I have been able to cope well with setbacks	637	1	10	6.37	2.26
The following questions ask about how you cope in difficult situationsDuring the last 6 weeks: - I have coped well when faced with negative events	637	1	10	6.39	2.36

The following questions ask about how you cope in difficult situationsDuring the last 6 weeks: - When faced with challenging events, I have found ways to overcome them	637	1	10	7.19	2.15
The following questions ask about how you cope in difficult situationsDuring the last 6 weeks: - I often find it difficult to bounce back following problems	637	1	10	4.56	2.54
During the last 6 weeks: - I have been optimistic about my ability to deal with life events	637	1	10	6.53	2.71
Valid N (listwise)	637				

Table B13: Resilience (Mental Health) Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
The following questions ask about your strategies for dealing with negative mood statesDuring the last 6 weeks: - I have had effective strategies for dealing with any stress	637	1	10	5.94	2.44
The following questions ask about your strategies for dealing with negative mood statesDuring the last 6 weeks: - I have had effective strategies for dealing with any anxieties	637	1	10	5.82	2.50

The following questions ask about your strategies for dealing with negative mood statesDuring the last 6 weeks: - I have had effective strategies for dealing with depression or depressive thoughts	637	1	10	5.84	2.62
Valid N (listwise)	637				

Table B14: Emotional Stability Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
During the last 6 weeks: - My emotions have been very changeable	637	1	10	6.29	2.85
During the last 6 weeks: - I have frequently experienced swings between positive and negative moods	637	1	10	5.28	3.10
During the last 6 weeks: - I have found it hard to control my emotions	637	1	10	5.18	3.05
During the last 6 weeks: - I have frequently struggled to cope with my own emotions	637	1	10	4.74	3.07
During the last 6 weeks: - I have frequently experienced strong negative emotions	637	1	10	6.00	2.75
Valid N (listwise)	637				

Table B15: Worry Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
During the last 6 weeks: - I have spent a lot of time worrying about things	637	1	10	6.90	2.77

During the last 6 weeks: - I have worried a lot about upcoming events	637	1	10	6.22	3.04
During the last 6 weeks: - I have felt unable to control my worrying	637	1	10	5.64	3.12
During the last 6 weeks: - I have worried a lot about something bad happening to me in the future	637	1	10	5.25	3.21
Valid N (listwise)	637				

Table B16: Fatigue Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
During the last 6 weeks: - Physical fatigue has frequently interfered with my daily routine	637	1	10	5.75	3.03
During the last 6 weeks: - Mental fatigue has frequently interfered with my daily routine	637	1	10	5.85	3.05
During the last 6 weeks: - I have frequently felt physically fatigued	637	1	10	6.98	2.60
During the last 6 weeks: - I have frequently felt mentally fatigued	637	1	10	6.73	2.81
During the last 6 weeks: - I have frequently felt tired and drowsy when I should have been wide awake	637	1	10	6.68	2.83
Valid N (listwise)	637				

Table B16: Stress Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation

During the last 6 weeks: - I have frequently felt stressed	637	1	10	6.57	2.61
During the last 6 weeks: - There have been a lot of things causing me stress	637	1	10	5.99	2.74
During the last 6 weeks: - I have frequently experienced physical symptoms which I believed were caused by stress (e.g., difficulty sleeping, feeling physically tense, having headaches, etc.)	637	1	10	6.04	2.91
Valid N (listwise)	637				

Table B17: Social Support Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
During the last 6 weeks: - I have felt supported by one or more of those close to me when needed	637	1	10	8.32	2.24
During the last 6 weeks: - I have felt like I have strong and lasting relationships with people that I know well	637	1	10	8.08	2.35
During the last 6 weeks: - I have had someone to turn to when/if needed	637	1	10	7.78	2.51
Valid N (listwise)	637				

Table B18: Goal Orientation Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
During the last 6 weeks: - I have worked hard to achieve the goals I have set	637	1	10	6.06	2.62

During the last 6 weeks: - I have been happy with the goals I have set myself	637	1	10	6.35	2.38
During the last 6 weeks: - I have planned my life around my goals	637	1	10	5.60	2.96
During the last 6 weeks: - I am often in control of setting my own goals	637	1	10	7.47	2.34
During the last 6 weeks: - When I reach my goals, I typically experience satisfaction	637	1	10	7.65	2.32
Valid N (listwise)	637				

Table B19: Anger Intensity/Frequency Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
During the last 6 weeks: - I have frequently felt angry	637	1	10	4.25	2.74
During the last 6 weeks: - I have frequently felt frustrated	637	1	10	5.65	2.73
The following questions ask about anger over the last 6 weeks: - I have frequently been irritated	635	1	10	5.36	2.83
During the last 6 weeks, how often have you found yourself becoming angry?	637	1	6	2.73	1.12
Valid N (listwise)	635				

Table B20: Anger-In Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation

The following questions ask about anger over the last 6 weeks: - I have tended to hide or disguise my anger from others	635	1	10	5.74	2.88
The following questions ask about anger over the last 6 weeks: - I have tended not to show my anger	637	1	10	5.97	2.87
Valid N (listwise)	635				

Table B21: Anger Duration Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
The following questions ask about anger over the last 6 weeks: - After becoming angry, I usually stay angry for a long time	634	1	10	3.35	2.43
The following questions ask about anger over the last 6 weeks: - After becoming angry, I usually calm down quickly	635	1	10	6.67	2.59
Valid N (listwise)	632				

Table B22: Anger Control Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
The following questions ask about anger over the last 6 weeks: - When I've been angry, I've been good at controlling my anger	636	1	10	6.71	2.51
The following questions ask about anger over the last 6 weeks: - When I've been angry, I've been bad at controlling my anger	635	1	10	3.36	2.54

Valid N (listwise)	634

Table B23: Anger-Out Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
The following questions ask about anger over the last 6 weeks: - I have verbally lashed out at other people	636	1	10	3.49	2.82
During the last 6 weeks: - I have lost control of my temper and lashed out at people	637	1	10	2.49	2.32
The following questions ask about anger over the last 6 weeks: - When I've been angry, people could tell by my actions	635	1	10	4.56	2.85
The following questions ask about anger over the last 6 weeks: - When I've been angry, I have frequently regretted it	637	1	10	5.04	3.03
Valid N (listwise)	634				

Table B24: Rage Items

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
The following questions ask about anger over the last 6 weeks: - I have frequently been full of rage	634	1	10	2.35	2.22
During the last 6 weeks: - I have lost control of my temper and lashed out physically at objects	637	1	10	2.10	2.09
Valid N (listwise)	634				

Appendix C

Factor Analysis Results

Exploratory Factor Analysis

Two exploratory factor analyses were conducted in order to reduce the Well-Being and anger data into latent variables in order to identify useful, more powerful constructs for further analysis. Both analyses followed Costello and Osborne's (2005) recommendations for best practice, using parallel analysis to identify the number of latent variables for extraction, followed by principal axis factoring, oblique direct oblimin rotation, and a cut-off point of .40 to determine item loading. Appropriateness for analysis was assessed via Kaiser-Meyer-Olkin values (Well-Being = .963, anger = .870) and Bartlett's test of Sphericity ($p < .001$ in both cases). This resulted in the identification of 33 Well-Being factors, of which 28 were amenable to labelling, and 7 anger factors, of which 6 were amenable to labelling. Table 1 and 2 illustrates the sixteen key Well-Being factors that were categories on interest for the purpose of this report as well as the six anger factors. The factor loading scores represent how strongly each individual item is related to each factor, with higher loadings indicating stronger relationships between the individual item and the factor score. These sixteen Well-Being factors were chosen in order to encapsulate core areas of psychological well-being and mental ill health that have previously been examined, in part, in the literature. Factors that would lead to far more speculative interpretation, like Financial Security, were left out of the analysis. The identification of such a large Well-Being factor structure suggests that existing scales looking at a much more restricted set of well-being categories may be limited in scope. The six anger factors are in keeping with previous factor structures of anger, with the exception of the separate 'Rage' factor that is a finding unique to the current study.

Table 1C: Factor Loadings

Item	Low mood/depression	Anxiety	Stress	Self-Harm/Suicidal Ideation	Positive Affect	Self-Esteem	Sleep Quality	Motivation	Social Life Quality	Social Support	Resilience (General)	Resilience (Mental Health)	Emotional Stability	Worry	Fatigue	Goal Orientation
I have frequently felt depressed	0.70															
I have found it hard to experience pleasure from things I usually enjoy	0.65															
I have frequently felt unhappy	0.60															
I have frequently experienced low moods	0.57															
I have frequently avoided doing things that I wanted to do due to my anxiety		0.84														
I have frequently avoided doing things that I should have done due to my anxiety		0.84														
My anxiety has frequently interfered with my daily routine		0.82														
I have frequently avoided social situations due to my anxiety		0.80														
I have frequently felt anxious in social situations		0.76														

I have frequently experienced physical symptoms which I believed were caused by anxiety (e.g., cold or sweaty hands, shortness of breath, heart racing, etc.)	0.75	
I have frequently felt anxious for no obvious reason	0.73	
I have frequently felt anxious	0.71	
I have experienced panic attacks	0.63	
There have been unexpected events which have made me feel anxious	0.63	
I have frequently felt stressed		0.75
There have been a lot of things causing me stress		0.73
I have frequently experienced physical symptoms which I believed were caused by stress (e.g., difficulty sleeping, feeling physically tense, having headaches, etc.)		0.70

I have sometimes felt like self-harming	0.84	
I have attempted to or engaged in self-harm	0.82	
I have had suicidal thoughts	0.79	
I have felt that my life is hardly worth living	0.71	
I have frequently felt worthless	0.66	
I have attempted or intended to commit suicide	0.66	
I have frequently felt I have nothing to look forward to	0.59	
I have frequently felt cheerful or joyful		0.81
I have frequently felt happy		0.77
I have frequently been in a good mood		0.71
I have felt that I lead a worthwhile life		0.68
I have frequently felt engaged and interested in activities		0.66
I have been satisfied with the quality of my life		0.60
I have frequently felt calm and relaxed		0.56

My well-being has been good	0.54		
I have frequently experienced strong positive emotions	0.53		
I have worried about other people's opinions of me		-0.79	
I have thought that others did not seem to like me		-0.78	
I have had low self-esteem		-0.76	
I have frequently lacked confidence in my own abilities		-0.70	
I have been satisfied with the quality of my sleep			0.72
I have suffered from insomnia			-0.70
I have been unable to sleep due to my mind racing as a result of stress/anxiety/tension etc.			-0.68
I have worried about coping with the day due to a lack of sleep the previous night			-0.63
I have usually woken up fully			0.63

refreshed and full of energy		
I frequently couldn't be bothered to do anything at all	-0.72	
I have spent a lot of time just doing nothing when I had things I should have been doing	-0.70	
I have had the motivation to get things done	0.69	
I have been productive and able to get things done	0.64	
I have sometimes needed prompting to get started on an activity	-0.62	
I have been a sociable person		0.83
I have felt confident in social situations with people I do not know		0.69
I have been a popular person		0.68
I have felt satisfied with the quality of social contact I have had		0.68
I have felt confident in social		0.64

situations with people that I know well				
I have felt satisfied with the amount of social contact I have had	0.62			
My social interactions have not been good	-0.62			
I have been an easy person to get along with	0.57			
I have felt supported by one or more of those close to me when needed		0.70		
I have felt like I have strong and lasting relationships with people that I know well		0.67		
I have had someone to turn to when/if needed		0.65		
I have been able to cope well with setbacks			0.80	
I have coped well when faced with negative events			0.78	
When faced with challenging events, I have found ways to overcome them			0.66	

I often find it difficult to bounce back following problems	-0.59		
I have been optimistic about my ability to deal with life events	0.56		
I have had effective strategies for dealing with any anxieties		0.88	
I have had effective strategies for dealing with any stress		0.86	
I have had effective strategies for dealing with depression or depressive thoughts		0.81	
My emotions have been very changeable			-0.81
I have frequently experienced swings between positive and negative moods			-0.79
I have found it hard to control my emotions			-0.77
I have frequently struggled to cope with my own emotions			-0.73

I have frequently experienced strong negative emotions	-0.64			
I have spent a lot of time worrying about things		0.79		
I have worried a lot about upcoming events		0.75		
I have felt unable to control my worrying		0.71		
I have worried a lot about something bad happening to me in the future		0.61		
Physical fatigue has frequently interfered with my daily routine			0.83	
Mental fatigue has frequently interfered with my daily routine			0.82	
I have frequently felt physically fatigued			0.80	
I have frequently felt mentally fatigued			0.79	
I have frequently felt tired and drowsy when I should have been wide awake			0.78	
I have worked hard to achieve the goals I have set				0.74

I have been happy with the goals I have set myself	0.74
I have planned my life around my goals	0.72
I am often in control of setting my own goals	0.69
When I reach my goals, I typically experience satisfaction	0.61

Note. Factor loadings < .4 are suppressed.

Table 2C: Anger Factor Loadings

Item	Anger Intensity/Frequency	Anger-In	Anger Duration	Anger Control	Anger-Out	Rage
I have frequently felt frustrated	0.88					
I have frequently felt angry	0.85					
I have frequently been irritated	0.62					
How often do you find yourself becoming angry?	0.61					
I have tended to hide or disguise my anger from others		0.86				
I have tended not to show my anger		0.84				
After becoming angry, I usually stay angry for a long time			0.84			

After becoming angry, I usually calm down quickly	-0.84			
When I've been angry, I've been good at controlling my anger		0.94		
When I've been angry, I've been bad at controlling my anger		-0.86		
I have verbally lashed out at people			0.90	
I have lost control of my temper and lashed out at people			0.62	
When I've been angry, people could tell by my actions			0.61	
When I've been angry, I have frequently regretted it			0.51	
I have frequently been full of rage				0.85
I have lost control of my temper and lashed out physically at objects				0.69

Note. Factor loadings < .4 are suppressed.

Appendix D

Ethics Approval Letter

University of BRISTOL

SCHOOL OF EXPERIMENTAL PSYCHOLOGY
12a Priory Road
Bristol BS8 1TU
Telephone: (0117) 928 9000

25th May 2017

Kristopher Magee
School of Experimental Psychology
The Priory Road Complex
Priory Road
Clifton
Bristol
BS8 1TU

Dear Dr Magee,

53021 – Creating an integrated, comprehensive and standard measure of well-being: Phase 2

The application was discussed and approved with the following recommended changes:

- The committee recommends ensuring participants have a 'prefer not to say' option on the questionnaire or make it available for participants to leave answers blank and proceed with the questionnaire.
- It should be made clear on all study documentation that participants will be entered into a prize draw.

Ethics approval code: **25051753021**

Good luck with your research.

Liam McKervey
Research Governance and Ethics Officer

[redacted]
pp
Dr. David Kessler,
Chair - Faculty of Science Human Research Ethics Committee